CUK- 24632-64-P015530
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PAMPHLET

America's Food and Europe's Needs 1941

(64)

Food: War and Postwar

By JOHN D. BLACK[1]

PRAISE God, and pass the nutrition" is the parody of a popular war song some soldier boy wag is said to have sung out to his pals waiting in line with their mess plates. Probably the incident is somewhat apocryphal, but whether it is or not is beside the point. The circumstance that such a version of the theme took hold of the prevailing fancy and was passed on from camp to camp, and reported in newsreels and vaudeville skits, indicates that the public has been made aware of nutrition as a part of this war as in no war before.

To be sure, we had a food scare in the last war. The United Kingdom became desperately aware of what the submarine might do to her food supply. And after that peril was averted and the United States entered the war, there arose a fear that the Allies would not produce enough food to keep the armies in the field. In this country a comprehensive food producing and distributing organization was set up with a "food administrator" in every county, and an emergency county food agent to help the farmers to plant and harvest a full crop. There were specialists in the service who gave thought to the composition of the diet and its qualitative adequacy, but the general public knew little of this.

AT THE OUTBREAK OF WAR

In contrast, this war broke upon Europe, and later upon this country, in a period of food surpluses, in the popular connotation of that term, with our own agricultural statesmen still trying to figure out ways of keeping stocks at levels that would not unduly depress prices. We knew that blockaded Europe might suffer, and that what reached the British Isles would have to run the U-boat gauntlet; but we had no thought of any gross shortages at this end of the supply line. Secretary Wallace, in a press release of September 1, 1939, spoke as follows:

> . . . present supplies of cotton, wheat, corn, meat animals, and many other commodities are large. There is little likelihood that any substantial increase in production of the major crops will be desirable, certainly not in the immediate future. In any case the need for increases in supplies can be anticipated in ample time to make any necessary increases in acreages. The production of large quantities of agricultural commodities for which there is no satisfactory market could prove just as demoralizing in wartime as in peacetime. . . .
>
> These facts must convince farmers that it will be possible to meet all demands for farm products; that it will be possible to avoid an overexpansion of our farm plant such as occurred during the World War period; and that it will be possible to cushion the shocks of the readjustment which will be inevitable if the present conflict continues over any lengthy period and on any large scale. . . .
>
> So, again, I urge our farmers not to be swayed by the developments overseas. Their greatest contribution right now to their own welfare and the national welfare is to carry on just as before.

Even at that early date, however, much discussion developed over the quality and composition of our diets, and as to how well fed were the lower-income groups in our population. On October 24, 1940, the writer addressed the Wellesley Conference on Nutrition as follows:

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[1] In the assembling of this volume, in the editorial work on the various articles, and in the preparation of the several sections bearing his name, the Editor had the assistance of the Committee on Research in the Social Sciences of Harvard University, and especially of its Secretary, Miss Althea MacDonald

> When we were in the last war, we had a slogan "Food will win the war!" We were then thinking of food for armies fighting in Europe. If we grew a garden to supply us with vegetables, this was intended to relieve us of the necessity of buying so much of the wheat that our soldiers needed. The objective then was to produce food *enough* to win the war—on quantities of food.
>
> The interest now is, first, in getting food consumed after it is produced; and, second, in getting the right kinds of food into the mouths of the malnourished. We are not much concerned this time with feeding armies—at least not on this side of the Atlantic—although no doubt the newer knowledge of nutrition has a contribution to make to this also. It is the civilian population that is becoming the center of our attention. We see clearly that it is the strength and endurance and morale of the mass of the people that today wins wars. This was, in fact, the final lesson of the World War. It has been abundantly revealed in the events of the last eighteen months. Hence at the same time that we are building up our armaments and training our fighting men, we need to go about building up our people.
>
> One phase of this is political in a sense. A democracy is weak unless it has the strong support of all its citizens. A government that lets its people suffer from hunger and malnutrition in the midst of plenty no longer is safe from the infiltration of perilous isms and from secret hostile groups. Its people are an easy prey. It is not the pangs of hunger that do most of the damage. The new science of nutrition teaches us that the nervous system is more vulnerable than the stomach when the right foods are not consumed. A democracy can feed its people well—all of them. It behooves the United States to demonstrate this to the world.
>
> Although, as I have indicated, the task before us starts with malnutrition and underconsumption, it by no means ends there. Before we have half reached our nutrition goal, we shall find ourselves sending orders back to our farmers to expand their production of several important foods. Early in this situation will come the need for more milk and other dairy products, and for more eggs. We shall presently find that in seeing that our people are properly fed, we have largely solved our problem of surplus agricultural production. Also we shall have shifted so much land to grass and sod crops that the wasting away of our fields from water and wind erosion is greatly reduced.

An important early contribution to interest in the composition of diets and in nutrition was the leadership of groups in the United States Department of Agriculture and the Public Health Service, who in 1940 set up the interdepartmental committee on nutrition, under the chairmanship of the Director of Agricultural Extension, M. L. Wilson. This later became the Nutrition Advisory Committee of the Office of Defense Health and Welfare Services.

DURING THE WAR

As all of us are well aware, the situation has greatly changed since 1940. Not only are many of our own former sources of food cut off, but even more, those of our companion nations. The East Indies are completely off of the supply lines, and most of Asia and Africa are reached only at great hazard. Shipping demands seriously reduce our food imports even from Central and South America, and the pace of the war effort has stepped up the demand tremendously.

Hence we are now interested in quantities of foods as well as kinds. But we need increased quantities of so many kinds of food that the distinction between the two seems to have lost much of its importance. We have also become acutely aware that quantities of some foods are much more important than of others—especially quantities of proteins, fats, and processed vegetables and fruits.

Although we are now all fighting a very different war from the last, it has certain things in common with it. Again the United Nations have the foods. Again the soldiers, sailors, and citizens of the democracies are well nourished wherever they are still unconquered. Great Britain's food experts believe that her people are better fed today than before the war. The old variety is gone, but the children now have milk and orange juice, and the general populace plenty of wholesome wheat bread with most of its natural minerals and vitamins, and an abundance of potatoes and staple vegetables.

We must also concern ourselves with the food of the now oppressed peoples on the continent of Europe. A recent report in the *Journal of the American Medical Association* estimates the present diets of Belgium at 35 per cent below standard in mere food energy, and those of Greece and Poland as still worse. The estimate for France is 25 per cent, for the Netherlands 20 per cent, for Italy 15 per cent, and for Norway 10 per cent. Germany, in part by robbing conquered subjects, has managed thus far to keep her average food ration pretty close to standard so far as mere calories are concerned, but the published rations indicate severe cuts in meats and fats for all except men in arms and workers in war industries. The rations of essential foods are still more reduced in Italy and several other of the countries named.

These figures in terms of mere calories conceal vast shortages of foods necessary for health and vigor. The evidence is unmistakable that the Germans are using starvation as a weapon of offense and oppression. They are deliberately depriving the peoples whom they wish to hold in subjection of the protective foods that would give them strength and spirit to resist. The untutored savagery of the Gothic ancestors of the Germans took the form of slaying an occasional enemy citizen with a sword or bludgeon. The modern and incomparably more malicious type of savagery attacks hundreds of millions with the sufferings of slow starvation. The great blessings which the modern science of nutrition has to offer to mankind, the demoniacal scientists of Germany now turn upon mankind as instruments of torture.

The 1942 crop is poor in much of Europe. The winter was severe, the spring late, and the summer weather unfavorable in many regions. More food suffering is ahead than behind. But the food-producing empires of the New World are preparing to meet the challenge. The granaries and warehouses of some vital foods were already well filled this time when the war began; and others are now filling, or production is being planned that will fill them.

AFTER THE WAR

Conquered Europe can look forward to diets like those of present England not long after the tide of war turns with the gathering military might of the New World republics and dominions. One after another these conquered nations, with the help which is surely coming, will drive out the invaders. They will then have opened up to them the food streams pouring out of the still fertile soils of much of the New World—food, first to relieve the pains of hunger, then to restore hope and faith, and courage to face the imponderable tasks of reconstruction. Food is the first step in restoring responsible self-government to Europe.

After the last war, the hungry crowds of central Europe wandered about for months pillaging for food and fighting every effort, good or bad, to restore order. This time the suffering people must be fed, and the disorderly, irresponsible elements held in check. This time the United Nations will not fight a great war wasting millions of lives and then let the very objects for which it was fought melt away like a snowball in the heat of postwar strife!

Twenty-five years ago when confronted with the task of supplying food for allied nations overseas, the United States had no prior experience upon which to base sound procedure. Out of what was learned in that war has come the lend-lease plan which has been followed since March 1941. It is not the final word, but it marks a tremendous milestone of progress. On the foundation of it may easily be built the necessary procedures for international co-operation between republics in winning wars fought for common causes, and in the reconstructions that follow. Reporting to his Congress recently, President Roosevelt wrote:

> The agreements postpone final determination of the lend-lease account until "the extent of the defense aid is known." The real costs of the war cannot be measured, nor compared, nor paid for in money. They must and are being met in blood and toil.

Furthermore, lend-lease is no one-way arrangement: "American troops on Australian and British soil are being fed and housed and equipped in part out of Australian and British supplies and weapons." In these reciprocal exchanges taking place during the war, we have laid the pattern, let us hope, for arrangements at the end of the war to settle any balances that may be due one country from another.

Agreements embodying these understandings of the lend-lease arrangements were signed with Great Britain last February, with China and Russia in June, and are being extended to all the thirty nations to whom offers of lend-lease aid have been made.

When the war ends, the problem of agriculture will not be to find outlets for surplus production, but to develop ways of distributing food so that the peoples of the Americas and the rest of the world can get the food they need for health.

OBJECTIVES

This volume therefore considers foods and nutrition in relation to the postwar years as well as during the war. All the knowledge of foods and nutrition that we now have must in due time be turned to the task of restoring order and building up a peace that will not be menaced by hunger and deficiency diseases.

No complete systematic treatment of a subject so comprehensive and ramifying is, of course, possible in a single number of THE ANNALS. What is attempted instead is to present enough relating to significant aspects of it so that the reader will get well acquainted with it and develop a compelling interest in following future developments in it.

For this reason a section on the technological phases of nutrition is introduced early in the outline. Malnutrition is made the focus of interest here—it is in these terms that the science of nutrition is going to be applied in the years just ahead. Only at a later stage will the approach become positive and constructive.

The section on the food situation is conspicuously incomplete and fragmentary. In the first place, important facts are not known, and some of the known facts are not available for publication. The material included, however, does indicate well enough the general state of food affairs.

One group of workers in this field, the home economists, will feel that the subject of preparation of foods is conspicuously omitted. There are many scattered statements about it, but nowhere anything like a systematic treatment. Another group will note a failure to deal in any detail with dehydration, quick freezing, and other forms of food processing. To have developed these two aspects of the food problem as they deserve would have shifted the emphasis in the volume too strongly toward the technological. The final section on "Production and Processing" gives the reader only a sketchy sampling of this large field. The writer hopes to deal more thoroughly with it in another connection later.

John D. Black, Ph.D., is professor of economics at Harvard University, Cambridge, Massachusetts, and a member of the Food and Nutrition Board of the National Research Council. He has also served as consultant to various governmental bodies, and as chief of the Division of Agricultural Economics at the University of Minnesota. He is author or joint author of several works, of which the latest are The Dairy Industry and the AAA (1935), Three Years of the AAA (1937), Agricultural Index Numbers (1938), and Parity, Parity, Parity (1942). He was editor of the Social Science Research Council series on scope and method of research in agricultural economics and rural sociology.

Nutrition, Social Science, and Public Policy

By Joseph S. Davis

NUTRITION, according to Webster's latest edition, is the "act or process of nourishing or being nourished. . . . The sum of the processes by which an animal or plant absorbs, or takes in and utilizes, food substances." The science of nutrition has developed with cumulative studies of these processes, of the complex variables that influence them, and of specific food commodities utilized in these processes. Amazing strides have been made in nutritional science since, as well as before, E. V. McCollum published the first edition of *The Newer Knowledge of Nutrition* (New York, 1918). Almost the same can be said of food technology. in the past twenty-five years. Yet the horizon ever recedes as we progress. Probably never before have the still unsolved problems in these branches of science and technology appeared so numerous as now.

The natural scientists have gone beyond the study of nutritional processes and the nutritive content and qualities of foods. They have sought to evolve workable concepts of malnutrition and optimum nutrition, to define, detect, and measure nutritional inadequacy and failure, and to ascertain the conditions of nutritional adequacy and success. They have studied ways of improving the nutritive content of foods as actually eaten, and of minimizing grave losses of valuable nutrients in harvesting, shipment, storage, factory processing, and preparing for the home table. They have been called upon to multiply their efforts so as to bring their best knowledge to bear in aid of the defense-war effort. Such efforts will continue to be needed in relieving and repairing widespread human devastation when hostilities eventually end.

The term "nutrition," indeed, has latterly come to be used also in the sense of state or status, of result rather than process. Thus it refers to the condition of individuals and groups with respect to the degree to which they are well or ill nourished by the food consumed, and therefore with respect to the various factors that combine to account for optimum nutrition or such degree of inadequacy as may exist. Some such collateral definition is surely needed.

Nutrition a Far-reaching Concern

Nutrition has far outgrown the laboratories of biochemists and food technologists, to whom it necessarily remains important. It has long played a vital part in the applied sciences and practices of agriculture and animal husbandry. From beginnings in connection with maternity, infants, and growing children, it has become one of the newer fields of therapeutic and preventive medicine and public health. Increasingly it concerns teachers in general as well as specialists in household science, home economics, and consumer education, and advertisers as well as those who use, berate, or regulate their activities. It deserves far more attention from statisticians, whose technical contributions are urgently needed at many points in scientific analysis, appraisal of conditions, and testing the results of measures applied.

It would be a mistake to assume that the scientists' laboratories and the specialists' practice have yielded a comprehensive, integrated body of tested scientific knowledge that can be quickly applied to insure optimum nutrition for all. It is not so easy. There are insidious dangers that laymen will put excessive faith in the best knowledge yet at hand, ignoring the limitations of which natural scientists themselves are painfully aware; or take too seriously the obiter dicta of certain scientists, or of writers who popularize and spectacularize certain "scientific" findings; or uncritically accept certain superstitions that some able scientists may unconsciously hold and occasionally utter. Quite enough has been learned, nevertheless, to justify increasing applications of nutritional science to human welfare.

These applications call for the work of social scientists as well as of technicians of many kinds. As the focus of interest has broadened to include not merely individuals but groups, whole nations, and even mankind, nutrition has definitely spread into the field of social science and is already giving rise to increasingly numerous questions of social policy. Even nutritional science and practice stand to gain from the contributions of the social scientist and the well-advised evolution of public policy. But in order to make their contributions, more social scientists need to acquire a firm grasp of nutritional knowledge, an insight into the social aspects of nutritional problems, and an interest in applying their special talents and knowledge to such portions of these problems as require their attention.

FIELDS FOR FURTHER DEVELOPMENT

A few tasks that ought to be done may be mentioned by way of illustration.

Between the body's *need for nutrients* and the consumer's *wants for food* there is a gap in understanding that needs to be bridged. This is part of the field of relations between needs and wants, which social scientists have as yet too inadequately explored. If the economist alone feels incompetent here, let him seek the aid of fellow scientists. Even in carrying further his analysis of wants, he in turn may get help from the nutritionist's findings with respect to the relative importance of variable amounts and proportions of nutrients.

The extension of rationing and other restrictions on consumption reveals urgent needs for improved analysis of differential utility, even if reliable measurement of differences be unattainable. We have long known that the glib distinctions between necessaries, comforts, and luxuries, between essential and unessential commodities and services, are utterly unscientific; but we have not fully realized how highly misleading they may be. There is an almost continuous gradation from the absolutely essential to the utterly superfluous; more and more goods are composites from this standpoint; the degree of dispensability is not inherent in goods, but relative in several different senses; and the dispensability of most specific goods has increased with the multiplication of more or less alternative goods. Such facts as these need to be ascertained in sufficient detail to be put to practical use.

Studies of nutritional inadequacy

There is ample evidence that suboptimal nutrition is widespread, even in the United States in its most prosperous peace years. Definitive measures are lacking, despite valuable analyses of data from family-purchase studies. We look to the natural scientists to make further strides toward perfecting means of detecting and measuring nutritional inadequacy in individuals (proximately due to deficiency, excess, or disproportion of specific nutrients), but we cannot afford to wait until they reach this goal. Indeed, we may well look to social scientists to improve and apply techniques of utilizing selected tests and measures, with appropriately selected samples of population groups, in order to get a general picture that is more nearly true and of greater practical significance.

The study of the factors responsible for nutritional inadequacy, both in general and in particular, must be pushed farther back than biochemistry alone can push it, to the geographic, economic, sociological, psychological, and even political influences that contribute to it. These factors should be so analyzed as to be related to specific forms of inadequacy rather than simply to over-all defect as compared with some more or less arbitrary composite "standard." If we say that one-third or two-thirds of our people are ill nourished, this is nothing like specific enough to be of value. If we can say that deficiencies in thiamine, nicotinic acid, or iron, of significant ranges in amount, are common in specified groups in specific areas or occupations, that means much. If we can say that the incidence of dental caries is not correlated with income or food expenditure, while deficiencies in calcium or ascorbic acid are, at least in some particular sections, this is usable knowledge.

Examination of prevailing policies

Prevailing policies and practices of business, government, agriculture, and labor, both in peace and in war, need to be examined for their bearing on the Nation's nutrition, with a view to ascertaining wherein and how far they promote or impede nutritional improvement. Does the virtual prohibition of imports of Argentine beef, except in canned form, have nutritional significance? or the current policy of boosting prices of superabundant wheat and effectually restricting its utilization for animal feed? If nutritional improvement rather than increasing farmers' incomes were the primary objective of surplus distribution of farm products, how much more could be accomplished with the same funds?

The nutritional impacts of depression and of wartime conditions and restrictions call for special analyses in which the natural scientist needs the collaboration of the social scientist. Current opinions on these matters are often conflicting or open to serious question. To what extent, if at all, do "people" ordinarily eat "too much," in total or of preferred foods such as sugar in various forms, and stand actually to benefit by the restraints brought by depression or war? Where, if anywhere, is the line to be drawn between harmless and harmful luxuries in the diet? What sorts of programs of contraction and expansion in food utilization, in different stages of the business cycle or of peace and war economies, represent a truly normal compromise between consumers' wants and nutritional needs as well as producers' interests?

The social scientist may well search for dominant adverse influences that are potentially susceptible of corrective treatment by one or another form of private or public action, with a view to bringing about the maximum improvement relative to cost. More general availability and (prior to the war) cheapening of citrus fruits and vitamin-rich vegetables, iodization of table salt, fortification of margarine with vitamin A, and enrichment of flour and bread with vitamins and iron, are examples of achievements within a relatively few years. Presumably equally important additions are potentially available.

A fundamental question arises concerning resort to public subsidy in aid of nutritional improvement. In recent years the disposition has been to multiply Federal subsidies of many kinds, without adequately reckoning with the multifarious consequences. Even the popular food stamp plan, school lunch program, and cheap milk schemes merit penetrating examination by competent students who will seek the whole truth and are free to set it forth when found. This whole field of policy is in need of thoroughgoing critical and constructive treatment, for which we must look to unbiased social scientists outside the government service.

POSTWAR IMPROVEMENT IN NUTRITION

In the larger view that is coming to prevail, it is a prime objective of civilized society to raise the plane of living of all peoples, not to some single type, level, or standard but according to their respective needs and preferences, in such ways as will make for harmonious relations within and among nations. If nations will devote to this objective even a sizable fraction of the intelligence, human energies, and material resources that total war brings forth, progressive successes can be confidently expected when the postwar reconstruction period merges into an era of genuine peace.

Improvement in nutrition, with its vital bearing on health, is one of the most tangible forms of advancement in living planes. Concentration upon it holds the possibility of far-reaching favorable consequences to world concord and the future of the human race. Great as the contributions of natural scientists have been and will be in this field, correlative contributions of social scientists are essential if satisfactory progress is to be made toward this generally accepted human goal.

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Landmarks in the Progress of the Science of Nutrition[1]

By C. A. Elvehjem

THROUGH modern methods of production we have seen, at least in many countries, an ample supply of food and at certain times an excess of food commodities. However, the biochemist has demonstrated that a full stomach does not necessarily insure adequate nutrition. The presence or absence of the minutest essential nutrient determines the efficiency of the vast bulk of our diet.

What constitutes food is an old question. As early as the time of Hippocrates there existed a belief in the occurrence of a single universal nutrient. There were many kinds of food, but they all supplied the same nutrient. Our ideas have changed considerably since that time. In fact, the entire evolution of nutritional studies is based upon the multiplication of the number of essential nutrients. Today we must deal with several dozen specific factors.

It is interesting that the idea of a single nutrient was held by the famous American surgeon, William Beaumont, as late as 1833. William Prout in 1834 considered that all organized bodies consisted of three great principles known today as sugar, fat, and protein. Shortly thereafter Magendie demonstrated that these principles have unlike nutritive values. The term "protein" was first used about that time by the Dutch chemist, Mulder. In 1870 von Beyer proposed the structure of sugars and it was shown that the simple sugar glucose circulates in the blood. Then followed the productive work of Emil Fischer on the chemical structure of both sugars and proteins.

Measures of Food Values

Quantitative analysis of food materials was attempted about 1800, but lack of methods prevented any real progress. A great advance was made when Henneberg in 1864 elaborated the method of proximate analysis which is still in use today. In other words, the food is divided into protein, fat, carbohydrates, ash, and water. The greatest recording of proximate analyses of American food materials was made by Atwater in Bulletin 28 of the United States Department of Agriculture, which contained 2,600 analyses.

During the latter half of the nineteenth century another means of measuring the value of food was developed, this method depending upon the determination of the caloric value of foods. Rubner found that carbohydrates and fat are interchangeable in nutrition on the basis of their energy equivalents. For many years greatest emphasis was placed on measuring the caloric value of foods and the energy requirement of humans under different conditions. This limited point of view may be likened to a modern motorist who watches only the gasoline tank and pays no attention to the oil in his engine, the tires on his wheels, or the spark plugs in his cylinders. However, as many of us have learned very recently, we cannot drive our cars unless we do have the gasoline. So in times of stress we find it difficult to meet the energy requirement, and an adequate source of energy is second only to a supply of oxygen and water.

In the United States we have learned that an average man doing an average day's work requires three thousand calories daily. We have also found that about 25 per cent of these calories must come from the fats in our diet. The bulkiness of carbohydrate foods makes it impossible to ingest sufficient calories to meet the requirement unless some come from fats. The standards for many of our other nutrients are related to the figure for energy requirement.

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[1] General references: E. V. McCollum, Elsa Orent-Keiles, and H. G. Day, *The Newer Knowledge of Nutrition*, 5th ed., New York: The Macmillan Co., 1939; Mary Swartz Rose, *The Foundations of Nutrition*, 3d ed., New York: The Macmillan Co., 1938.

About fifty years ago a few men had vision enough to suggest that analytical data alone did not necessarily represent the true nutritive value of foods. One of these men was Stephen Moulton Babcock. When he was at the Geneva New York Experiment Station he was asked to make analyses of certain feeding materials used in a metabolism experiment with the cow. He was also asked to analyze the feces by the conventional method of feed analysis. When he finished and presented his results to the director they were unable to tell from the analysis which was the food and which was the feces. This shook Dr. Babcock's confidence in the evaluation of feed materials by chemical analysis, and led to the animal experiments which he began at Wisconsin.

As early as 1881 Voit suggested the importance of feeding mixtures of pure chemical compounds in experimental studies with animals. We are approaching this goal today, sixty years later. Animal experimentation was started in many parts of the world: Bunge in Germany and Pekelharing in Holland used mice; Hopkins in England and Osborne and Mendel in the United States used rats; Eijkman in Java used chickens; and Babcock and Hart in this country used young calves. At first progress was extremely slow, much like the progress we make when we start putting a jigsaw puzzle together. However, after a few pieces were matched greater advance was made, and the final picture is now beginning to take form.

STUDIES IN PROTEINS

The early experimental diets were built around milk. Milk sugar, salts, casein, butter fat, and protein-free milk were used. When casein was left out it was possible to study the nutritive value of proteins. Through these studies it was possible to demonstrate that not all naturally occurring proteins had a nutritive value equivalent to milk casein. Hopkins in England, and Osborne and Mendel at Yale, demonstrated that the ineffectiveness of certain proteins was due to the fact that they lacked significant or essential amino acids. Many of these early workers found that it was necessary to learn more about the minerals and vitamins before the protein components of our diets could be studied intelligently. In the meantime, chemists continued identifying and preparing the individual amino acids found in the larger protein molecule. When Rose of Illinois started his studies on the nutritive value of amino acids about fifteen years ago, studies which have placed our knowledge of protein nutrition on a truly sound basis, all the amino acids were available except one. The lack of information about this one, threonine, had complicated studies using individual amino acids, for many years.

When this amino acid was available it became possible to combine a mixture of the essential amino acids and obtain growth in rats quite comparable to that obtained with complete proteins. Although the chemistry of the individual amino acids was rather definitely known, it was a great task to obtain sufficient quantities of these amino acids to carry out animal experiments. Rose called upon his colleagues in organic chemistry to manufacture many of these amino acids, and it is interesting that at the present time some of the larger manufacturing chemists are making many of them available on a commercial basis.

Although we now recognize that ten of the amino acids are essential in nutrition, we still cannot calculate the protein requirement on this basis, since we do not have a complete knowledge of the distribution of these amino acids in many of our proteins. However, we can use this knowledge for combining various proteins in such a way that they will yield an adequate amount of all the essential amino acids.

STUDIES IN MINERALS

One might assume that studies on the importance of mineral elements in nutrition would not require any great amount of chemical skill. However, much work has been carried out to devise methods for the determination even of such elements as calcium and phosphorus, which are present in large amounts. In the case of the so-called trace elements, we never suspected that they played a part in nutrition until methods sensitive enough to detect their presence were devised. Today we can determine very accurately elements such as copper, manganese, zinc, and cobalt, which occur only in minutest amounts in many of our foods.

Most of the early studies centered around the relative value of organic versus inorganic forms of mineral elements. Ordinary salt was readily acceptable as a source of sodium and chlorine in the animal body because it had been used for years as an addition to the human diet. That the body requires calcium and phosphorus for the construction of bones was never questioned by the physiologists, but nutrition workers did wonder if simple salts of calcium and phosphorus could be used in the diet. It was as late as 1925 before there was general agreement that the simple salts could be used, and today we find that certain of the complex forms of phosphorus, such as phytin, may not supply phosphorus to the body as readily as the simpler forms.

The greatest controversy took place regarding the value of iron salts. Although the use of iron in the treatment of chlorosis was suggested in the seventeenth century, no definite interest was taken in the importance of iron in nutrition until the latter part of the nineteenth century. The relation between iron and copper was first realized when Hart, Steenbock, Waddell, and Elvehjem demonstrated in 1928 that copper acts as a supplement to inorganic iron in the treatment of nutritional anemia in rats. Today it is generally accepted that simple iron salts are readily utilized for building the hemoglobin of blood if they are accompanied by an adequate supply of copper. It is also known that some of the iron in food is not so readily available as the simple iron salts. Only about 25 per cent of the total iron in vegetables can be utilized by the animal.

The most interesting story is that relating to iodine in nutrition. Goiter was known from ancient times to be confined to certain regions, usually mountainous districts, far removed from the sea. The first large-scale experiment in goiter prevention with iodine in man was begun in 1917 through the efforts of Marine and Kimball. They concluded that goiter is the simplest, easiest, and cheapest of all known diseases to prevent. This conclusion led to the use of iodized salt, which is perhaps the first example of food fortification in the United States. Later work, especially that of McClendon, has shown conclusively a true relationship between the incidence of goiter and the iodine content of soil and water. Today we know that all mineral elements, with the exception of sulphur, can be supplied in the form of simple salts. During the past few years, not only have we been interested in the amount of valuable elements in our foods, but means of controlling the intake of such toxic elements as fluorine and selenium have been developed.

STUDIES IN VITAMINS

During the past twenty years we have seen chemists identify, purify, isolate, and produce synthetically many of the vitamins with dramatic rapidity. Diseases which we now recognize as resulting from inadequate intake of specific vitamins have been known for centuries, but it is only within the present century that chemists began to recognize vitamin-like compounds in yeast, liver, rice polishings, and lemon juice. In all cases, greatest progress was made when the deficiencies could be produced experimentally in the laboratory animal.

In the early studies, the activity of the vitamins was evaluated in terms of growth. The real impetus for such studies came from Hopkins when he showed the very significant effect of the addition of a few cubic centimeters of milk to a purified diet. It remained for McCollum and his co-workers to show that both vitamin A and vitamin B can be measured on the basis of growth in rats. All the early work on the additional members of the B complex was based on growth responses in rats and chicks. Even vitamin C was measured to some extent through growth experiments with guinea pigs. The vitamins were called "growth factors," and Sherman did much to put these growth responses on a quantitative basis. Sherman and Smith in their book on vitamins stated:

> Thus by 1920 it was well established that normal growth of the young, at least in the human and some other species, demands adequate supplies of at least three substances believed to be identical with the substances which are essential to the prevention of the three "deficiency diseases" of scurvy, beriberi, and the characteristic ophthalmia.[2]

Greater progress was made when the specific diseases, such as rickets, beriberi, and scurvy, were produced in the experimental animals.

The first vitamin to be given serious chemical consideration was undoubtedly vitamin D. Steenbock and Black, and Hess and co-workers, showed in 1925 that crude cholesterol could be activated by ultraviolet light. The following year several workers demonstrated that ergosterol was the actual provitamin. These observations stimulated a great interest in the structure of sterols, a problem which had received only sporadic attention. It was not long before the complete structure of sterols was elucidated, and now a number of different forms of vitamin D have been described. The complete synthesis of these sterols is still not possible, and therefore vitamin D can be produced only by the irradiation of some natural source of sterols.

The next vitamin to succumb to chemical attack was vitamin A. Although Steenbock suggested in 1919 that carotene was closely associated with vitamin A activity, the complete confirmation did not come until ten years later, when Euler and Moore independently demonstrated the activity of carotene. Carotene is the yellow pigment found in carrots and in many of the green vegetables. It has been isolated in pure form and is now used as a concentrate for vitamin A activity. The isolation of crystalline vitamin A was reported by Holmes and Corbet in 1937 and it has been synthesized in the laboratory. However, neither synthetic vitamin A nor carotene is available commercially, and it is therefore still necessary to rely entirely upon natural sources.

If we were not limited in space we might tell some interesting tales about how some of the vitamins were discovered. There is such a story about vitamin C. The compound was actually isolated by Szent-Györgyi in 1927, but it was five years before anyone, including the discoverer, knew that it had vitamin C activity. In 1932, King and Waugh, and Sverbeley and Szent-Györgyi, demonstrated the identity of vitamin C, which is now known as ascorbic acid. With this knowledge available it did not take long to establish its constitution and develop methods of synthesis. Today synthetic vitamin C is available at prices equivalent to many of our ordinary chemical reagents.

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[2] H. C. Sherman and S. L. Smith, *The Vitamins* (2d ed., New York: Chemical Catalog Co., 1931), p. 20.

Vitamin B complex

The first member of the B complex to be isolated was the antiberiberi factor. This dietary constituent was isolated in 1926 by Jansen and Donath, who were working in the same laboratory in which Eijkman started his animal work. Eight years later Williams published his improved method for the isolation of this vitamin and soon offered a tentative chemical structure for it. With the co-operation of Merck and Company it was soon synthesized, and it is today being prepared and sold at about 50 cents per gram.

The identification of the next factor grew out of chemical studies on tissue enzymes. The biological activity of this compound in animal nutrition was established shortly after its identification, but its relation to human disease was not understood until five years ago when Sebrell and Butler cured cheilosis in humans with pure riboflavin.

The third member of the B complex, nicotinic acid, or niacin, has been known chemically for about sixty years, but its nutritional significance was not recognized until 1937. It is interesting to note that considerable difficulty was encountered in recognizing the antipellagra factor because the usual laboratory animals, such as the rat and the chick, do not need this compound preformed in their diets. It was only possible to identify nicotinic acid as the antipellagra factor when dogs were used as the experimental animal. As soon as its activity in dogs was established, it was found to be active in the treatment of human pellagra.

At least five additional members of the vitamin B complex have been identified, and will be discussed in detail in another article.

The developments in nutrition which have been described so far can probably be classified as the chemical era of vitamin research. To be sure, animals were used for measuring the activity of these compounds, but because of these studies it has been possible to obtain most of the essential nutrients in the pure chemical form. In fact, it has recently been possible to grow rats on diets containing only the known constituents, except for one or two exceptions. The availability of these pure compounds has allowed the development of other important fields of study.

BIOLOGICAL ACTION OF NUTRIENTS

Until very recently little thought was given to the biological action of various nutrients. In 1897 Eijkman suggested that beriberi was a state of intoxication brought about by the metabolism of excessive quantities of starch, and that the silver skin of the rice contained a substance which would counteract the toxic productions of the disturbed metabolism. Later, in 1906, he agreed that there is present in rice polishings a substance indispensable to health.

In 1911, Hart, McCollum, Steenbock, and Humphrey, from studies with calves on rations compounded from restricted sources, were led to postulate an inherent toxicity in the wheat grain. This toxicity was overcome by something in a variety of forages. In 1924 they were able to show that the results observed by them thirteen years previously represented a typical vitamin A deficiency brought about by the very low amount of vitamin A in the wheat grain. More recently we have seen a similar story in the case of egg-white toxicity and biotin. Today, due to the work of György, Rose, Eakin, Snell, and Williams, we know that egg white does not affect the metabolism process in the animal tests, but that egg white combines with biotin in the intestinal tract and prevents the absorption of this essential vitamin.

The conclusions reached by many of the early workers were not surprising, since at the end of the last century Pasteur had shown that epidemic diseases were caused by microorganisms, and it seemed that every disease must have its positive agent. Among the first attempts to understand the action of vitamins was the histological study of tissues from vitamin-deficient animals. These studies had a profound effect on all future work, since they indicated how the absence of a minute trace of a nutrient could produce a complete change in the structure of certain tissues.

Still more significant are the recent studies on the relation of vitamins to enzymes. In other words, many of the vitamins and some of the mineral elements, such as copper, manganese, and zinc, function in the animal body as catalysts by taking part in certain enzyme systems. Thus, today we no longer associate thiamine or vitamin B_1 with beriberi, but rather with a coenzyme needed for the normal combustion of sugar in the cells of the body. If this condition is allowed to continue long enough, the severe symptoms of beriberi develop; but the disturbance in the cells is present long before the external signs appear. These relationships have stimulated nutrition workers as well as clinicians to look for metabolic changes which occur early in the vitamin deficiency. It is therefore possible to diagnose vitamin deficiencies at a time when therapy is most effective.

VITAMIN CONTENT OF FOODS

The most important recent development in the field of vitamins has been the improvement in the methods of determining the vitamin content of common foods. Chemical methods are now in common use for vitamin A, vitamin C, and vitamin B_1. Bacteriological methods are used with much success in the case of other vitamins. In other words, bacteria need vitamins for growth the same as animals, and since bacteria grow and reproduce in a few hours, the length of the assay has been reduced from weeks to hours.

The best example of the value of these improved methods is in the case of nicotinic acid. When nicotinic acid was first recognized as a vitamin, the only accurate method of estimating its content in foods depended upon growth studies with dogs. With this method one assay required almost three months, and the determination could be made only for foods relatively rich in the vitamin. Within the past eighteen months a satisfactory bacteriological assay has been developed, and a hundred determinations can be made in two weeks. The method gives equally as good results with corn, which is very low in nicotinic acid, as with liver, which is one of the richest natural sources.

As a result of studies of this kind we are beginning to accumulate values for the distribution of vitamins in foods which are almost as extensive as the original tables of Atwater for the proximate analysis of foods. These methods have also been of great value in establishing the daily human requirements for the essential nutrients. A few studies have been made directly on humans, but much of the information has come from animal experiments. In fact, if we had not relied upon animal work, much of the information now being used would not be available.

It is true that more and more evidence is accumulating to show that there are great variations in the requirements of different species of animals. This fact was first recognized in the case of vitamin C, when rats continued to grow on diets devoid of this vitamin, but humans, monkeys, and guinea pigs failed to do so when sufficient vitamin C was not given. The nonessential nature of nicotinic acid in the diet of the rat has already been mentioned. The ruminants can get along on diets practically devoid of the vitamin B complex, because all its factors are synthesized by the microorganisms in the rumen. In spite of these variations, much can be learned about human nutrition from the animals studied, because the human probably requires all the factors needed by any of the different species.

FURTHER STUDIES NEEDED

It is also clear that in spite of the fact that many of the nutrients can be measured by chemical means, much more animal work is needed. It is necessary to study the more chronic deficiencies, and also the condition produced by multiple deficiencies, because this is the type of nutritional disorder encountered in the human. The effects of age and varied environmental conditions need to be studied. Sherman at Columbia and McCay and workers at Cornell have studied the effect of different nutritional regimens on the length of active life and longevity in rats. More work of this kind is needed.

In conclusion, we can say that the nutritional requirements of man can be expressed in quantitative terms to greater extent than ever before, but we must recognize that there is more to adequate nutrition than the mere combining of the known compounds into a diet and the calculation of the cost of these dietary constituents. There are interrelationships, effects of one food upon another, which we have only begun to realize, and which may play important roles in total nutrition. Hart has recently summarized these problems in a few words as follows:

> Chart all the factors in nutrition, organic and inorganic, and study their distribution, physiology, pathology and interplay. . . . Put the need for these factors on a quantitative basis, with optimum allowances for the complete cycle of the animal's life.[8]

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[8] E. B. Hart, "The Guiding Principles for Nutrition Research," *Proceedings of the American Society of Animal Production,* 1937, pp. 48–50.

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Soils and Nutrition

By CHARLES E. KELLOGG

MOST foods come from plants, or from animals that eat them. And the plants grow in soils—many soils—that vary widely from one another in all the chemical, physical, and biological properties that influence the amounts, kinds, and quality of plants which can be grown in any place. Now that modern technology has revolutionized our food habits, it is up to modern science to check the nutritional quality of our foods all the way along the line from the soil to the people. It has now become common knowledge that processed foods, like white flour, polished rice, refined sugar, and badly cooked vegetables, are lacking in the essential minerals and vitamins that our less finicky ancestors got in the natural foods. But it is not always realized that we are more numerous than they were and must use our soils more intensively, with pronounced effects on the resulting agricultural products. If man is to be healthy, the soils must be managed with a view to crop quality as well as to yield.

PHYSIQUE AND DIET

The most striking examples of the effects of soil upon nutrition and health have been with grazing cattle and sheep. Several diseases of cattle in many parts of the world, at one time of mysterious origin, are now known to have been caused by phosphorus deficiency of the soil and consequently of the grass and feed crops. The animals had soft bones and stiff, swollen joints. They became thin and poor, especially the cows and young stock, and many of them died. Such conditions can be corrected by using phosphatic fertilizer on the soil or by giving the stock supplemental mineral feeds. A deficiency of calcium in the soil also leads to serious diseases in livestock. Commonly, deficiencies of phosphorus and calcium go together. Among growing animals there probably are more cases of the former, while calcium deficiency is probably more common among people.

Cobalt deficiency disease in cattle and sheep was first noted in Australia and New Zealand, but recently it has been discovered in the United States among dairy cattle.

Other examples of deficiency diseases among both humans and animals have been described by Orr, Price, Marett, and others.[1] These deficiencies in soil and food sometimes lead to sickness and death; often there is stunted or abnormal growth. Isolation on a particular kind of soil with deficiencies of one or more vital nutrient elements, like calcium, phosphorus, cobalt, iron, or iodine, will cause trouble.

Bad dietary habits will aggravate any original deficiencies in soils and plants. That is, among people eating foods grown on calcium-deficient soils, those selecting foods naturally low in calcium will have especially poor diets.

The relationship between soil conditions and physical development is more clear among animals and primitive human societies than in many modern human groups. This we should expect, because people in the cities and others with good incomes obtain their food from a wide variety of sources. In one sense this is a good thing: there is safety in having a wide variety of foods, both as to kinds and origin, since the danger of any extreme deficiency is lessened. At the same time, serious deficiencies in foods produced on soils supporting low-quality plants are concealed and can be discovered only through careful research. Such foods impair health even though they may not cause obvious sickness.

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[1] John B. Orr and Helen Scherbatoff, *Minerals in Pastures and Their Relation to Animal Nutrition,* 150 pp., illus , London Lewis, 1929; Weston A. Price, *Nutrition and Physical Degeneration—A comparison of primitive and modern diets and their effects,* 431 pp , illus., New York: Hoeber, 1939; R. de la H. Marett, *Race, Sex and Environment: A study of mineral deficiency in human evolution,* 342 pp , illus , London· Hutchinson, 1936.

Even in the modern world, many people do live almost entirely on local foods. If the local soils have one or more serious nutrient deficiencies, the people suffer. Generally, people living close to the land in regions having well-leached acid soils, especially in the tropics, have diets very poor in calcium and phosphorus. Many cases have been reported where their physical development and general health are poor. So far, attention has been given mainly to the extreme cases, where diets were so bad as to produce direct symptoms. A great many diets that are inadequate for health have not been suspected until recently because they do not produce direct symptoms, but increase susceptibility to diseases. Fortunately we now know enough about nutrition to understand that these severe cases indicate widespread general deficiencies, often related to soil conditions and soil management.

Over a long evolutionary period, both people and animals have some ability to adjust themselves to deficiencies in the diet. Groups of people that have lived for many generations on calcium-and-phosphorus-deficient soils seem to be more efficient in the use of these elements than others. The teeth of Europeans will become diseased, for example, in tropical areas where the natives have good teeth.

VARIATIONS IN FOOD

The number of different foods is almost beyond count. Except for poisons that act quickly, nearly every plant or animal substance is, or has been, used as an ingredient of food or drink by someone, and many mineral substances as well. Roughly, the chemical constituents of food may be grouped under four main heads: (1) carbohydrates and fats, (2) proteins, (3) minerals, and (4) vitamins. Soil conditions and soil management practices, including the use of fertilizers, influence all of these, but their relation to the mineral content of foods is best known and seemingly of greatest importance. Although future research will doubtless lead to increased emphasis upon the influence of soil on vitamins, there is hardly enough known now about the matter even for speculation.

Recently K. C. Beeson collected the available data on the mineral content of foods, especially as related to soil type and soil management practices.[2] His tables show, for example, that lettuce may contain nearly 0.05 per cent or less than 0.001 per cent of iron. Vegetables of normal appearance may vary 100 per cent in their content of calcium. There are even greater differences in phosphorus, while copper, iron, and manganese may show variations of several hundred per cent. By selecting obviously abnormal specimens, far greater variations are found. Some of the differences are due to variety, some to environmental conditions, especially soil, and some to other causes.

Since deficiencies in animal foods have been directly related to soil conditions on the one hand and to animal diseases and death on the other, there is every reason to believe that soil conditions are of vital importance to human food. The problems are local because they are matters of the relationship between the soil of a spot, the plant that grows in that spot, and the animal that eats it. In one field cattle or sheep may sicken, whereas they may thrive on an adjoining field of different soil.

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[2] Kenneth C. Beeson, *The Mineral Composition of Crops with Particular Reference to the Soils in Which They Were Grown,* U. S. Dept Agr. Misc. Pub. 369, 164 pp., 1941.

SOILS AND PLANTS

Like plants and animals, soil types are too individual for one to say much about them generally. Each type of soil has its own morphology, productivity, geography, and social value. Each is a complicated mixture of mineral and organic materials, along with air, water, living organisms—not a helter-skelter mixture, but one with an orderly pattern determined by the factors that have produced it.[3] In addition to the natural differences are those brought about by man's use, which may have improved or depleted the soil. The crops that the farmer has grown, the fertilizer that he has used, and his other practices change the soil. In fact, the farmer makes the arable soil from the natural soil. He makes it better or poorer than the natural soil according to his aim and skill.

Most of the chemical elements have been found in soils and plants. Fourteen of these are known to be essential for most crop plants as follows: carbon, hydrogen, and oxygen from the air, and nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, iron, manganese, zinc, boron, and copper, taken from the soil. Perhaps molybdenum, sodium, chlorine, silicon, and several others play some roles in the growth of certain plants, as yet not well established. In addition, there are a few others like iodine, sodium, chlorine, and cobalt that are known to be essential to animals.

These several elements occur in soils in many different forms and combinations with other elements that vary in solubility and other properties. Thus only a little knowledge about the biological chemistry of the soil is revealed from its total chemical analysis. Rather we must be concerned with the amounts of these available to plants, the ability of the soil to make up for withdrawals by plant roots, and especially the balance among them. If the amounts of nitrogen are relatively too high, plants will grow abnormally. If calcium is in excess, the intake of other essential elements, like magnesium, is depressed. Then, too, magnesium is essential for the movement of phosphorus within the plant. Plants must have a good supply of each of the nutrient elements for good growth, but their composition is especially influenced by the balance among the nutrients.

The relationship between the feeding roots of a plant and the particles of soil is both intimate and complex. Often the roots of a single plant are found in several layers, or soil horizons, of greatly different physical and chemical properties. Even within one soil horizon, individual rootlets or root hairs have totally different soil environments. One rootlet may be in contact with a particle of calcium phosphate, another with a piece of weathering potash felspar, and still another with a clump of decomposing organic matter, all within a space of a fraction of an inch. In one spot the soil may be acid while an adjacent root hair is in a slightly alkaline soil.

A natural soil is, then, in striking contrast to a simple water culture. Plants of quite different nutritional quality may be grown in soils that appear to be similar. A knowledge of individual characteristics, like acidity, content of particular constituents, texture, and structure, is helpful in understanding a soil, but it is the soil as a whole—the soil type, considering the whole pattern of its properties—that is the basis for classifying our knowledge about soil responses.

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[3] A nontechnical explanation of the nature, the formation, and the use of soils is given by Charles E. Kellogg in *The Soils That Support Us*, 377 pp., illus., New York: Macmillan, 1941.

THE GEOGRAPHY OF SOILS

Soil types do not occur promiscuously over the face of the earth, but each represents the combined influence of five factors—climate, living matter, parent rock, relief, and age. Climate and vegetation are dynamic factors, acting upon the parent material over periods of time and conditioned by relief. Each combination of these factors produces a distinctive soil. The significance of a change in any one depends upon the others. That is, in some combinations a slight change in climate or relief causes the formation of an entirely different soil, whereas in other combinations—in other soil conditions—there may be a wide range in one of the factors.

There are two general sorts of differences among soils—local and regional. Both are important to nutrition. Climate and vegetation are responsible for the broad regional areas of soil. The black (Chernozem) soils of the subhumid temperate regions, for example, have abundant supplies of calcium and fair to good supplies of phosphorus, but they are usually low in iodine. The red (Laterite) soils of the humid tropics are usually low in calcium and phosphorus. The grayish-brown leached (Gray-Brown Podzolic) soils of temperate humid regions—the region of Western civilization in western Europe and eastern United States—are relatively poor in calcium and phosphorus, although better than the soils of the humid tropics, and fairly well supplied with iodine. Such broad regional differences among soils are responsible for broad differences in the quality of diets made up of locally grown foods and may have much to do with the original differences among the human races.

Locally, however, there are wide differences among the soil types of all those broad regional areas. If the parent rock is very low in some essential mineral, the resulting soil is likely to be low also, especially where it has been leached. Thus many of the leached and sandy soils of the southeastern part of the United States are deficient in several elements essential to good plant and animal nutrition, beginning with calcium and phosphorus, but including also iron, copper, and several others. On the other hand, soils in Kentucky and Tennessee developed from phosphorus-rich limestones have abundant supplies of phosphorus, even though subjected to the effects of forests and a humid climate. Local variations in soils like these, due to differences in parent rock, relief, and age, may be as important to individual fields as the broad regional differences. Even in arid or semiarid regions where there is little leaching, local soil types are often seriously deficient in one or more essentials nutrients.

The fundamental unit in soil classification is the soil type, defined according to all the characteristics that influence plant growth. Each one is narrowly defined, and a relatively small change in one of the genetic factors—climate, living matter, relief, parent rock, or age—leads to a different type. Generally a soil type occurs in relatively small areas of a few acres except in unusually uniform landscapes; but the same combination of genetic factors may be repeated over and over again and there may be a great many areas of a single soil type scattered over a large region, intermingled with areas of other soil types.

It is on the basis of these local soil types that data on crop adaptability and crop quality are classified and recommendations for management made. In respect to some one characteristic, like phosphorus deficiency or need for lime, several types may be grouped together.[4]

SOIL TYPE AND NUTRITION

The realization of this close relationship between soil type and plant quality is a comparatively new thing. Serious deficiency diseases among livestock have been traced directly to the soil and corrective means developed. Although the early work was concerned with extreme cases, now that the causes are understood, general improvements in animal nutrition are being made. In relation to the quality of human food, studies of soils are only getting under way. The results promise to be of great significance. Not only must people learn to select the right kinds of foods and prepare them properly, but also farmers must know how to manage their soils to insure that foods of high quality appear on their tables and in the market place.

Much remains to be learned. We shall need to know the dietary adequacy of plants grown on the different soil types and how quality can be improved through proper management. Such knowledge is being accumulated. A new borderline science between nutrition and soil science is appearing. It is the meeting ground of soil science, agronomy, plant physiology, biological chemistry, and the science of nutrition as applied to a central theme: On what soil types shall we grow our various food plants and how shall they be managed for food of maximum quality?

A GLANCE AHEAD

As the newly awakened interest in soil conservation deepens and broadens, farmers will have better soils in which to grow their crops. Increased emphasis upon grass, the use of lime and phosphate, and diversified cropping systems will improve crop quality. But this will not be enough. Renewed emphasis must be given to the adaptation of individual food crops to soil types. Greater attention will need to be given to the balance among all plant nutrients. Fertilizers will become increasingly specific for individual soil types, so that local deficiencies of boron, manganese, cobalt, copper, sulphur, iron, and zinc may be corrected as well as the more generally known deficiencies of nitrogen, potassium, phosphorus, calcium, and magnesium.

Through the aid of science new varieties of crops and new breeds of animals are being developed that more nearly satisfy the needs of civilized man. The farther these get away from the plants and animals of the natural landscape, the more care must be taken to protect them from diseases of all kinds, including nutritional deficiencies. If man is to have the benefits of modern science in production and in health, no gap can be left to chance. Soil is the very basis of all life, and no less care can be taken of its requirements for good production than of the plants, the animals, and the men it supports.

Charles E. Kellogg, Ph.D., has been chief of the Division of Soil Survey in the United States Department of Agriculture since 1934. Previously he served on the staffs of Michigan State College, the University of Wisconsin, and the North Dakota Agricultural College. He is author of Soil Survey Manual (1937), The Soils That Support Us (1941), and many bulletins and papers dealing with soil science.

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[4] The types are given geographic names plus the class name of the surface soil texture, as, Miami silt loam, Barnes loam, and Cecil sandy loam.

Food and Physique

By T. D. Stewart

IT TAKES the human male from twenty to tweny-five years to reach his full stature, and the female several years less. During this period of development many influences act upon the physique, altering the rate and pattern of growth. Even before birth, although the intra-uterine organism is relatively protected from direct external influences, it is indirectly affected by such things as the quality of the mother's nutrition. After birth, nutrition, illness, climate, and other factors affect the individual in varying degrees. Thus, as Todd has aptly remarked, "The adult form of mankind is the outcome of growth enhanced, dwarfed, or mutilated by the adventures of life."[1]

That which Todd here picturesquely has called "the adventures of life," most anthropologists simply have termed environment. According to one definition,

> By environment is understood firstly geographical location—continental, latitudinal, altitudinal, meteorological, and climatological; secondly local setting, urban or rural; thirdly immediate surroundings—social conditions, home occupation; and lastly physical conditions—food, clothing, medical attention, sleep, amount of exercise, etc.[2]

In segregating food from among these many environmental factors and attempting to show its relative importance in relation to human physique, I realize that I am essaying a difficult task. Human beings rarely can be subjected to controlled experimentation, except possibly during early life; in other words, in man's case the effect of nutrition usually cannot be fully separated from that of the other factors. Nevertheless, I believe that the role of food can be distinguished clearly in relation to growth, and at least inferred in accounting for the physical divergences of population groups in different periods.

Various physical characters could be used to show the relationship of food and physique, but limitations of space and the need for simplicity of presentation make it desirable to restrict discussion to one or two of these characters. Especial emphasis will be placed upon stature, because this is a measure that frequently is taken, and taken with a minimum of error. Although a variation in stature one way or the other is of little advantage in the welfare of either the individual or the group, there is every indication that this measure is a good gauge of general development. When final stature is reached the physique is established, and the usual food supply has little further effect thereon, except as it alters weight. I shall consider in detail, therefore, only the period, beginning with birth, during which the physique is formed.

Physical Differences at Birth

It is common knowledge that full-term infants vary markedly in size. Males are larger on the average than females. The offspring of members of tall races also are larger than those of short races. Still a considerable range in size within each sex persists even in individual racial groups. Aside from these hereditary determinants, the size of the offspring depends on the number of children that the mother has borne, on her social status, and on her physical condition during the latter months of pregnancy. To illustrate the effect of

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[1] T. Wingate Todd, "Anthropology and Growth," *Science*, Vol. 81 (1935), pp. 259–63.

[2] Gordon Townsend Bowles, *New Types of Old Americans at Harvard* (Harvard University Press, 1932), p. 139.

TABLE 1—COMPARISON OF VARIOUS EXTERNAL DIMENSIONS IN NEWBORN MALES FROM DIFFERENT SOCIAL ENVIRONMENTS[a]

Dimensions	First-born		Later-born	
	5th Ave. Hospital[b] (Mean, 114 cases) mm.	Bellevue Hospital[c] (Mean, 205 cases) mm.	5th Ave. Hospital[b] (Mean, 91 cases) mm.	Bellevue Hospital[c] (Mean, 265 cases) mm.
Body length	508.9	500.3	514.9	506.8
Body weight (gms.)	3432.0	3331.0	3588.0	3536.0
Face breadth	71.4	70.8	72.6	72.3
Circumference of thorax	316.7	308.1	322.1	317.8
Shoulder breadth	114.3	112.0	116.7	115.4
Pelvic breadth	75.9	74.2	78.6	77.0

[a] After Bakwin and Bakwin; see note 3. [b] Paying patients. [c] Charity patients.

birth order and mother's social position on birth size, Table 1 contains some data on newborns obtained by the Bakwins in two New York hospitals drawing patients from different social strata.[3] These data might be questioned on the ground that nothing is stated regarding the racial composition of the samples. This may be of no significance, for similar findings have been reported from other places where the population is more homogeneous.[4] Moreover, a clear correlation has been noted between the stage of development of the newborn and the nutrition of the mother in cases where the mother's diet has been controlled during the pregnancy.[5]

It thus appears that at birth there is no such thing as physical equality; that in a given racial group the newborns of one sex delivered to mothers of the leisure class, or at least those who are well nourished, are larger and more developed than those born to working-class and poorly nourished mothers. In how far the fetal weight can be controlled through the mother's diet is not fully established, but it appears that Nature governs the process so as to insure within hereditary limits the birth of reasonably normal children. Emaciated and disease-ridden women, for instance, often give birth to normal, though perhaps smaller, children. The relationship of the child's size to its mother's parity, on the other hand, seems to be independent of nutrition and to be a provision of Nature to facilitate the birth process.

THE BEGINNING OF POSTNATAL LIFE

Birth brings about an abrupt change in the environment of the child. From being surrounded by sterile fluid and being nourished involuntarily through a special hookup with the mother's circulatory system, the child is suddenly brought into air laden with germs and is forced to obtain its nourishment more or less voluntarily by new routes. Partly as a result of this readjustment and partly because the mother's milk is not immediately abundant, infants lose on the average about 6 per cent of their birth weight during the first three days of postnatal life and regain it only after ten days. How this loss affects children of different size and different birth order

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[3] Harry Bakwin and Ruth Morris Bakwin, "Body Build in Infants. V. Anthropometry in the New-Born," *Human Biology,* Vol. 6 (1934), p. 617, Table 3 (modified).

[4] Howard V. Meredith and Addison W. Brown, "Growth in Body Weight During the First Ten Days of Postnatal Life," *Human Biology,* Vol. 11 (1939), pp. 24–77.

[5] Callie Mae Coons, "Studies in Metabolism During Pregnancy," *Oklahoma Agricultural Experiment Station Bulletin* No. 223 (1935), 113 pp.

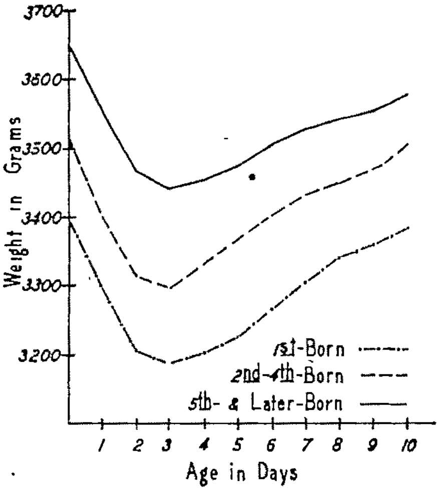

FIG. 1.—Loss of weight and recovery therefrom over a period of 10 days in male newborns of different birth order (after Meredith and Brown).

is shown in Figure 1.[6] Here it will be seen that the heaviest children and those of highest birth order lose more weight than the others, and hence the mean weights of the groups are a little closer at the end of the first ten days than they were at birth.

This loss of weight following birth has been regarded by some as an unnatural phenomenon and indicative of semistarvation. Accordingly, numerous studies have been directed at its prevention through supplementary feedings. One such formula, Kugelmass' gelatin hydrating solution, is said to reduce the loss to 1.7 per cent of the birth weight when given at two-hour intervals.[7] In general, however, some weight loss occurs regardless of the supplementary feedings, and this must probably be attributed to the physiological adjustment following birth.

THE PATTERN OF GROWTH

The adventure of the first ten days of life is repeated over and over in different degrees during the succeeding years as childhood diseases, the vagaries of feeding, and the physiological processes retard or accelerate growth. Nevertheless, in spite of wide individual variations there is a pattern to normal growth that is repeated in populations all over the world. In illustration of this point, Figures 2 and 3 are instructive.[8] Here are shown the growth curves for stature of representatives of the three major races—white, black, and yellow-brown—living in quite different environments. The differences due to race and sex, as well as the growth spurt associated with puberty, are apparent; but not apparent here are differences due to varying nutrition and climate.

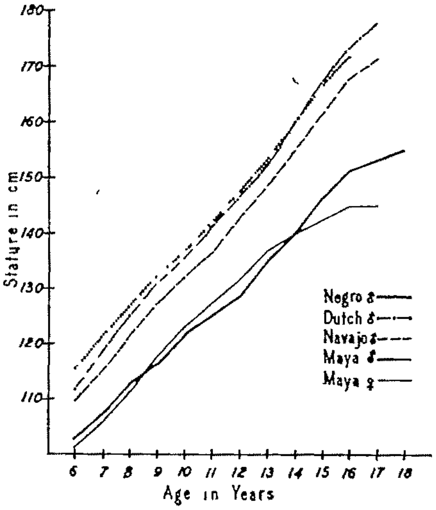

FIG. 2.—Growth in stature between 6 and 18 years of age in various racial groups. The curve for only one female group is shown, but the others follow much the same pattern (after Steggerda).

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[6] Howard V. Meredith and Addison W. Brown, *op. cit.*, p. 47, Fig. 2 (modified).

[7] Newton Kugelmass, Ruth E. L. Berggren, and Mildred Cummings, "Preventing Loss of Weight in the New-Born," *American Journal of Diseases of Children*, Vol. 46 (1933), pp. 280–308.

[8] Morris Steggerda, *The Maya Indians of Yucatan*, Publication No. 531 (1941), Carnegie Institution of Washington, Figs. 17 to 19 (modified).

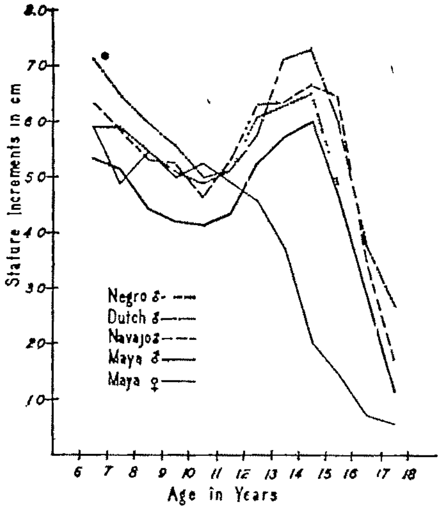

FIG. 3.—Annual increments of stature between 6 and 18 years of age in several racial groups. The curve for the Maya females is fairly typical of the general female growth pattern (after Steggerda).

Perhaps, however, the differences that we are attributing to race may be due in part to nutrition and climate. Steggerda has pointed out, for example, that the Maya Indians of Yucatan live in a semitropical climate and on a predominantly maize (carbohydrate) diet, which certainly is in contrast to the environment of the Dutch sample from Holland, Michigan. According to Mills, hot climates tend to suppress growth on account of the body's inability under these circumstances to dissipate the waste heat of metabolism.[9] Also, Mills claims that under the conditions of hot climates the body requires an increased amount of the B vitamins, which conversely are deficient in the locally grown foods.

In order to disentangle the effects of these various factors we should have data on two identical samples from a single racial stock living under the same climatic conditions but subsisting on different foods. Such ideal data are very scarce, for where the samples of the same population are separated geographically, both climate and food usually are different; or the element of selection may have entered into the separation of the two population samples.[10]

Among the oldest observations along this line are the differences in stature, head shape, and so forth, between the rural and urban populations of Europe, which, although not very marked, seemingly can be explained only on the grounds of selection and different nutrition. A more marked physical difference, and at the same time perhaps more indicative of the role of nutrition, was found by Boas in his study of immigrants into America and their descendants. By comparing the foreign-born with those born less than ten years after the arrival of the mothers and those born ten years or more after the arrival of the mothers, Boas was able to show ". . . that the influence of American environment upon the descendants of immigrants increases with the time that the immigrants have lived in this country before the birth of their children."[11]

In explaining the physical changes that he found in the descendants of immigrants, Boas does not attempt to analyze the American environment (New York City) or to compare it with the European environment from which the immigrants had come. He does point out, however, that prior to 1909 rickets and other nutritional diseases were much more common in European cities than in New York. He mentions, too, that the increase in stature "... might simply be ascribed to the better nutrition of most of the north and central European immigrants after their immigration into this country" (p. 51).

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[9] C. A. Mills, "Climatic Effects on Growth and Development with Particular Reference to the Effects of Tropical Residence," *American Anthropologist,* Vol. 44 (1942), pp. 1–13.

[10] For example, Shapiro concluded that the Japanese immigrants into Hawaii were a selected group as compared to the general population in Japan from which they were derived. H. L. Shapiro, *Migration and Environment,* Oxford University Press, 1939.

[11] Franz Boas, *Changes in Bodily Form of Descendants of Immigrants* (Report of the Immigration Commission, 1911), p. 9.

The increasing stature at all ages up to maturity that Boas observed in his descendants of immigrants appears to be part of a general phenomenon now frequently recorded throughout the civilized world[12] and usually attributed primarily to the general advance in wealth and knowledge. That this phenomenon is not due merely to better nutrition is suggested by the observation that growth in different human groups varies significantly from year to year without any apparent relationship to economic factors.[13] So far it has not been determined whether these secular growth variations are general or local phenomena, and no satisfactory explanation has been offered. Shuttleworth is of the opinion, however, "... that the cumulative influence of a long series of good or of poor growing years might have a profound effect on mature stature and weight."[14] Obviously, the same could be said about the cumulative effect of food upon mature physique.

One more detail of the growth pattern should be described because it depends upon measurements of the same individual over seven or more years. Most growth curves, such as those shown in Figures 2 and 3, are based on averages and often on different samples at each age. The individual growth curves, on the other hand, show considerable variability, as might be expected; that is, the maximum annual increment or the adolescent spurt in growth may take place in boys at 13–14 years or as late as 16–17 years, and in girls at correspondingly earlier ages. Significantly, however, the final result is related to this time of maximum growth. Figure 4, which demonstrates this fact for stature, has been prepared from data published by Boas.[15] Here it will be seen that groups of boys having the same stature at 17 years differ in their final statures depending on the age at which they get their maximum growth; in other words, those boys of a given height at 17 years who have a delayed time of maximum growth finally will be taller than those with an earlier time of maximum growth.

At present very little is known about the relative roles of heredity and environment in producing this variability in the individual growth patterns. Nevertheless, it would seem that the later the time of maximum growth the better the chance for nutritional and other environmental factors to play a part. If, as some believe, there is a definite optimum time during childhood for the growth of each specific feature, then anything that delays or interrupts this schedule may cause this growth to fall short of ideal. And contrarily, the favored children should be, and indeed are, found to be the best developed at all ages of the growth period.

MATURE PHYSIQUE

Stature, as has been stated, is known to have increased from generation to generation both here and abroad during

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[12] Cf. Gordon Townsend Bowles, *op. cit.* Also see Howard V. Meredith, "Stature and Weight of Children of the United States, with Reference to the Influence of Racial, Regional, Socioeconomic and Secular Factors," *American Journal of Diseases of Children,* Vol. 62 (1941), pp. 909–32.

[13] Carroll E. Palmer, "Variations of Growth in Weight of Elementary-school Children," *Public Health Reports,* Vol. 48 (1933), pp. 993–1005.

[14] Frank K. Shuttleworth, "Good and Poor Years for the Growth of Girls in Stature and Body Weight," *Human Biology,* Vol. 12 (1940), p. 286.

[15] Franz Boas, "Studies in Growth," *Human Biology,* Vol. 4 (1932), pp. 343–344, Table 17e.

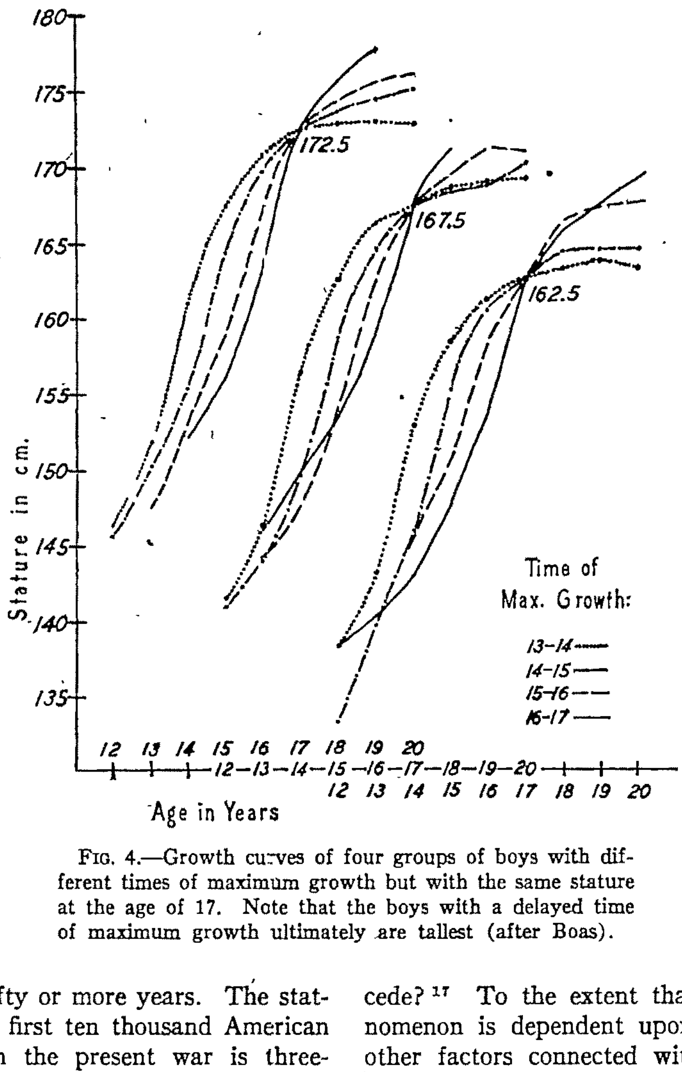

FIG. 4.—Growth curves of four groups of boys with different times of maximum growth but with the same stature at the age of 17. Note that the boys with a delayed time of maximum growth ultimately are tallest (after Boas).

the past fifty or more years. The stature of the first ten thousand American draftees in the present war is three-quarters of an inch above that recorded for 1917–18.[16] And still this general level of size is well below that of selected American groups such as college men (173 cm. for the Army versus 178 cm. for students 19 years of age). Does the latter represent a potential size that our population as a whole is approaching? Or will the human growth tide soon recede?[17] To the extent that this phenomenon is dependent upon food and other factors connected with the economic advance, it seems likely that physique will become stabilized, for these factors cannot be improved indefinitely. However, judging from the great advances in the science of nutrition during recent years and the limited extent to which as yet these finds are being generally utilized, it may not be unreasonable perhaps to expect even further physical responses in the future.

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[16] Personal communication from Major G. D. Williams, Office of the Surgeon General of the Army. See also Charles B Davenport and Albert G. Love, *Army Anthropology*, Washington, 1921.

[17] Clarence A. Mills, "Further Evidences of Reversal in the Human Growth Tide," *Human Biology*, Vol. 13 (1941), pp. 363–77.

Be this as it may, the point to bear in mind during the present emergency, when food shortages are bound to occur, is the dependence of the growing body at all stages upon nutrition. Although there may appear to be recovery from the setbacks due to temporary shortages of vital foods, every such episode probably leaves its scar. For instance, the permanent teeth formed during a period of malnutrition are usually hypoplastic and highly susceptible to decay.[18] Indeed, the prevalence of dental caries among civilized peoples in itself probably is witness to the fact of improper diet. And the same perhaps may be said even of the varieties of human physique.[19]

The present emergency, besides focusing attention upon the dietary needs of the subadult portion of the population, offers an opportunity, through military records and large assemblages of soldiers, for the further evaluation of mature physique. It is important to know whether the initial indication of an enhanced physique in the present Army persists in larger samples and whether it is associated with fewer physical defects leading to deferment than in 1917–18. Also, we should have accurate anthropometric measurements on a large segment of soldiers for comparison with those obtained at the close of the last war. The findings from such studies, combined with modern knowledge of food values, would make it possible to institute a long-range program for improving still further the physical well-being of the American people.

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[18] Weston A. Price, *Nutrition and Physical Degeneration*, Paul B. Hoeber, Inc., 1939.

[19] Sheldon admits that ". . . perhaps food or early environmental factors may play a part in the final determination of the somatotype." W. H. Sheldon, *The Varieties of Human Physique* (Harper & Brothers, 1940), p. 227.

Types of Nutritional Deficiency

THIS article is not intended to give the reader a complete coverage of the subject of nutritional deficiency. Rather it was conceived as a means of giving the scientists working in this field a chance to show us their methods of working, a sample of their achievements, and a view of the realms of nutritional science still to be conquered. Purposely several types of workers have been asked to display themselves—the biological chemists, the medical nutrition researchers, the home economic researchers; also the clinicians and the laboratory technicians. Reading with this thought in mind, one will become aware that in recent years an increasing amount of the research is being conducted by medically trained men with human subjects. This gives to the epic of scientific achievement which these sketches unfold a touch of the dramatic.

Although the several reports are listed as separate and individual types of deficiencies, it becomes apparent in the first sentences of Dr. Wilder's article that actual cases of deficiency usually involve several factors, and each article that follows makes this truth clearer. Thus nutritious natural foods are relied upon to prevent malnutrition disease and deficiency, and even curative treatment when applied to social groups of underfed people must rely in large measure on such foods under ordinary circumstances.—J. D. BLACK.

VITAMIN B_1 (THIAMINE)

By RUSSELL M. WILDER

FEW if any of the nutritional abnormalities encountered in clinical practice represent deficiency of any single nutrient. Deficiency of vitamin B_1, however, is probably an important factor in most of the numerous cases of multiple nutritional deficiencies. The reason for this is apparent from the following statement of the causes of thiamine deficiency.

Few foods are good sources of thiamine. Of the important foods in occidental diets, the only ones naturally rich in thiamine are the bread grains, meats, milk, legumes such as peas, and beans, and nuts. But most bread grains have most of the thiamine removed in processing. White patent flour retains little more than a tenth of the thiamine in wheat; and bread makes up a sizable fraction of the average diet. Sugar, which makes up another considerable fraction, has no thiamine. The amounts of meat, milk, legumes, and nuts generally consumed simply do not make good the large loss of thiamine. As a result, a majority of the people even in the United States are receiving less thiamine than they need.

Basing calculations on the disappearance of food products for human consumption in the United States, Lane and co-workers conclude that the total provision of thiamine does not exceed an average of 0.32 mg. per 1,000 calories.[1] This figure equals that defined by the United States Food and Drug Administration as the ***minimal*** daily adult requirement necessary to prevent actual disease. The minimal daily requirement to prevent biochemical abnormality, as determined by Williams and co-workers, is 0.45 mg. per 1,000 calories.[2] The allowance recommended by the Food and Nutrition Board of the National Research Council is 0.6 mg. per 1,000 calories. If the average person receives only 0.32 mg. per 1,000 calories, it should be obvious that millions of our population are suffering from actual deficiency disease and that relatively few diets provide enough thiamine for full health and efficiency.

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[1] R. L. Lane, Elizabeth Johnson, and R. R. Williams, "Studies of the Average American Diet. I. Thiamine Content," *Journal of Nutrition*, 23: 613–24, June 1942.

Secondary deficiency of thiamine results from conditions which (1) interfere with its intestinal absorption, (2) interfere with its conversion into the form (co-carboxylase) in which it is active in the body, or (3) increase the requirement of the body for thiamine. Interference with absorption may result from various disturbances of the absorptive power of the gastrointestinal tract. Among them the diarrheal diseases are most important. Interference with utilization of thiamine after absorption is mainly encountered in diseases of the liver. Increased requirement is created by pregnancy, febrile infectious disease, toxic goiter, and other stresses, including hard manual labor. Exposure to heat may also increase requirements.

Alcoholism frequently is accompanied by thiamine deficiency. The diet of the alcoholic addict is usually deficient in the first place, and digestion and absorption are impaired in addition. The total energy exchange is also increased, particularly in delirium tremens, which creates an increased demand for this and other vitamins. Jolliffe and Wortis regard Wernicke's syndrome, which consists of paresis of the ocular muscles in association with clouding of the mind and ataxia, as depending primarily on deficiency of thiamine.[3] In twenty-four of twenty-seven cases, the patients were alcoholic addicts. Abnormality of the pyruvic acid content of the blood was observed in these cases, and administration of thiamine was curative.

Symptoms of thiamine deficiency

Changes of attitude and behavior—depression, apprehension, irritability—were the conspicuous early abnormalities developing among human volunteers maintained for many months by Williams and associates on diets which, otherwise adequate, were deficient in thiamine.[4] Loss of working efficiency also developed early. In part the decreased efficiency could be related to inattentiveness, in part to uncertainty of memory, and in part to actual weakness. Other subjective complaints were loss of appetite, heartburn, constipation, headache, backache, and sleeplessness.

The subjective symptoms of deficiency of thiamine, as well as the objective manifestations of abnormality to be described, developed during periods when the allowance of thiamine was restricted. They were corrected on increasing the supply. All changes of supply were made without the knowledge of the subjects.

Lowering of the basal metabolic rate —the rate of oxygen intake—was observed among most subjects. Decrease of the concentration of protein in the blood plasma was inconstant; when present, it was accompanied by anemia.

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[2] R. D. Williams, H. L. Mason, and R. M Wilder, "The Minimum Daily Requirement of Thiamine in Man," *Journal of Nutrition*, in press.

[3] Norman Jolliffe and Herman Wortis, "Encephalopathia Alcoholica; An Evaluation of Vitamin Therapy," *American Journal of Psychiatry*, 98: 340–46, Nov. 1941.

[4] Williams, Mason, and Wilder, *op. cit.*, note 2; Williams, Mason, Wilder, and B. F. Smith, "Induced Thiamine (Vitamin B_1) Deficiency and the Thiamine Requirement of Man: Further Observations," *Archives of Internal Medicine*, 69: 721–38, May 1942; Williams, Mason, Wilder, and M. H. Power, "Observations of Induced Thiamine Deficiency in Man: Relation of Depletion of Thiamine to Development of Biochemical Defect and of Polyneuropathy," *Archives of Internal Medicine*, in press.

The body stores of thiamine, as measured by a "saturation test," were progressively diminished. Slightly elevated values for blood sugar and abnormal elevation of blood levels of intermediary metabolites, such as pyruvic acid and lactic acid, were also demonstrated.

The blood pressures were lowered and the subjects experienced pallor and giddiness on rising from recumbent positions. The pulse rates at rest were slowed. They were accelerated on exertion. Electrocardiographic abnormalities developed. One subject showed mild edema. Cardiac dilatation was not observed. Edema and cardiac dilatation are common occurrences in beriberi. The predominant deficiency in beriberi is thiamine, but several other deficiencies probably coexist. They may account for the frequency of edema and heart failure.

Subjective disturbances of the sensory nervous system, such as abnormal sensations and increased sensitiveness to noise and to painful stimuli, were early complaints in the subjects of the experiments. Polyneuropathy involving clear-cut defects of sensory or motor pathways with loss of tendon reflexes (knee and ankle jerks) and paralysis of muscles developed late and in only four of some twenty subjects. In these cases the final picture closely resembled the clinical descriptions of beriberi. Possibly inadequacy of nutrients other than thiamine contributes to the more frequent development of pronounced defects of sensory and motor nerves in clinical beriberi. Hard labor in a hot, humid climate may also tend to exaggerate the effect of deficiency of thiamine in the beriberi encountered in the Orient. The subjects of the experiments were engaged in sedentary occupations, and the climate was temperate.

Thiamine deficiency and beriberi

An important deduction to be drawn from the studies of Williams and associates is that most cases of clinical thiamine deficiency escape detection because the presence of edema (dropsy) or polyneuritis (polyneuropathy) has been demanded before considering this diagnosis.[5] Profound disability dependent on disturbance of function of the nervous system results from an inadequate supply of thiamine before gross (anatomic) defects become apparent. The earlier manifestations of thiamine deficiency are limited to biochemical defects—molecular disarrangements—whereas the gross or anatomic defects of the heart and of the sensory and motor nerves, characteristic of beriberi, represent manifestations of more severe or more prolonged deprivation of thiamine or of coexistent deficiency of other nutrients.

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[5] See note 4, above

RIBOFLAVIN

By ESTHER L. BATCHELDER

RIBOFLAVIN, alternately called vitamin G and vitamin B_2, is another of the vitamin B complex which has received considerable attention in recent years. The refining of foods plays some part in prevailing deficiencies of intake of this vitamin, but not the large role that it does in the case of thiamine.

Riboflavin deficiency in man, if severe enough, results in lesions on the lips, known as "cheilosis," characteristic lesions on the skin near the nostrils, and occasionally similar symptoms on the ears, around the eyelids, and on the bridge of the nose. A change in the tongue, readily identified by a trained observer, has also been recognized. The eyes show marked changes which include failing vision, sensitiveness to light, signs of inflammation, and tissue changes. These eye lesions, although not invariably present, bring such distress and disability as to make them the most important result of riboflavin malnutrition.

Certain details concerning the abovementioned symptoms may be of interest. A word of warning should be said, however, against diagnosis by any but a physician, since any of the signs here popularly described may easily be confused with similar symptoms due to entirely different causes. The value to a layman of knowing the general description of any type of disease is that he may know that something is wrong and make sure that the sufferer goes to a physician or clinic for diagnosis and treatment. The changes about the mouth usually include characteristic cracks in the skin at the angles of the mouth, a shiny red and bare appearance of the lower lip, and a smooth, bright red tongue The changes in the skin about the nose, ears, eyes, and sometimes other regions of the body, include appearance of oily scales and sometimes a "sharkskin" effect. The eyes appear bloodshot, are often watery, and the sufferer may be conscious of sensitiveness to light and dimness of vision. The dimness of vision in this case is apparently due to a change in some of the transparent tissue of the eye so that light can no longer pass through the affected parts. A sign of this deficiency which can be detected in the laboratory is a marked lowering of the amount of riboflavin excreted in the urine. This sign of a subnormal supply of riboflavin for normal functioning of the body tissues may appear before any of the previously named symptoms are apparent. It is probable that growth in humans, as in animals studied experimentally, is retarded by suboptimal supplies of riboflavin. The relation of this vitamin to certain enzymatic systems doubtless explains its importance in metabolism.

Reports of widespread occurrence of riboflavin deficiency disease, diagnosed by qualified observers, indicates that the diet of many Americans is too low in this factor. Milk, liver, kidney, and eggs are generally recognized as dependable sources of this factor. Whole-grain cereals are not very rich on a weight basis, but, if used instead of refined products, can appreciably increase the intake of this vitamin. There are still many gaps in our knowledge of the riboflavin content of foods which make generalizations difficult. As in the case of other types of malnutrition, the eating of a wide variety of natural foods is good insurance against riboflavin deficiency. When this wide variety is not available, the best of our scientific knowledge must be used to make sure that emergency diets and rations meet minimum human needs.

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NIACIN

By DAVID T. SMITH

LACK of niacin, until recently called nicotinic acid, is always associated in the popular mind with pellagra, a disease of our own South. But, like other vitamin deficiencies, it has its milder manifestations, and occurs commonly as one phase of multiple deficiency.

Pellagra was recognized as a specific disease by the Spanish physician, Casal, in 1735.[6] The name "pellagra" (*pelle agro,* rough skin) was introduced by Frapolli of Italy in 1771.[7] Over 150 years of study revealed the economic importance of the disease and its prevalence in Spain, Italy, Rumania, Egypt, Africa, and the southern states of our own country. It was not until Joseph Goldberger and his associates in the United States Public Health Department conducted a series of experiments between 1915 and 1930 that pellagra was conclusively proved to be a deficiency disease. The most dramatic of these studies was the famous prison farm experiment in Mississippi. A group of convicts voluntarily ate a pellagra-producing diet for a period of months, developed typical pellagra, and were pardoned by the progressive governor of the state for their service to humanity.[8]

Goldberger recognized spontaneous blacktongue in dogs as the analogue of human pellagra, and devised a diet for producing experimental blacktongue. Using this method of biological assay, he demonstrated the relative value of our common available foods in preventing pellagra.

In 1930, Goldberger and Sebrell found that powdered extracts of liver, then in use for the treatment of pernicious anemia, were very effective in curing experimental blacktongue in dogs.[9] By 1932 Boggs and Padget were able to report a large series of moderately severe pellagrins which were cured by powdered extracts of liver.[10] Later in the same year Smith and Ruffin reported excellent results in a small series of cases treated with a crude aqueous extract of whole liver.[11]

In 1933 Ramsdell and Magness and Spies began to inject into the muscles or into the blood a specially purified fraction of liver.[12] This was of definite value in patients who were too ill to take food by mouth. By 1935 Spies had succeeded in reducing the pellagra mortality from 32 per cent to 6 per cent.[13] While the liver treatment was a striking improvement over the old yeast treatment, still from 6 to 10 per cent of the severely ill pellagrins continued to die of the disease.

It was obvious that the mortality in

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[6] G. Casal, cited in R. H. Major, *Classic Descriptions of Disease* (Springfield, Ill.: Charles C. Thomas, 1932), p. 575.

[7] F. Frapolli, cited by S. Harris, *Clinical Pellagra* (St. Louis: C. V. Mosby Co., 1941), p. 134.

[8] J. Goldberger and G. A. Wheeler, "Experimental Pellagra in the Human Subject Brought About by a Restricted Diet," *Public Health Reports,* 30: 3336, 1915.

[9] J. Goldberger and W. H. Sebrell, "The Blacktongue Preventive Value of Minot's Liver Extract," *Public Health Reports,* 45: 3064, 1930.

[10] T. R. Boggs and P. Padget, "Pellagra: Analysis of 102 Cases," *Bull. Johns Hopkins Hospital,* 50: 21, 1932.

[11] J. M. Ruffin and D. T. Smith, in S. Harris and S. Harris, Jr., *Clinical Pellagra* (St. Louis: C. V. Mosby Co , 1941), p. 214.

[12] R. L. Ramsdell and W. H. Magness, "Parenteral Liver Extract Therapy in Pellagra," *American Journal of Medical Science,* 185: 568, 1933; T. D. Spies, "The Treatment of Pellagra by Means of Parenteral Liver Extract," *Proceedings of the Society of Experimental Biology and Medicine,* 31: 363, 1933.

[13] T. D. Spies, "The Treatment of Pellagra," *Journal of American Medical Association,* 104: 1377, 1935.

pellagra could not be reduced much below 6 per cent until the pure vitamin was isolated so that ten to a hundred times the amount present in the best extracts of liver could be given directly into the blood stream of the severely ill pellagrins.

In 1937, Elvehjem, Madden, Strong, and Woolley at the University of Wisconsin isolated nicotinic acid amide from liver and showed that nicotinic acid and nicotinic acid amide cured experimental blacktongue.[14] The value of nicotinic acid, or niacin, in the treatment of pellagra was demonstrated independently and almost simultaneously by four different groups of workers. The first published report was by Fouts and his associates in November 1937.[15] On December 18, 1937 two communications appeared—one by Harris of England[16] and the other by Smith, Ruffin, and Smith of Duke.[17] Spies, Cooper, and Blankenhorn had treated successfully seventeen cases by February 1938.[18] These early reports have been confirmed by scores of other investigators in this country and abroad.

Niacin may be given by mouth or by intravenous injection. Consequently it is now possible to save patients who are so nearly dead that they can no longer take medication by mouth. Many patients with severe mental symptoms who formerly progressed to hopeless insanity can be restored to normal. Jolliffe and his associates were able to cure with niacin a large percentage of patients with a severe mental type of pellagra which before was almost always fatal.[19]

Soon, however, Spies, Sebrell, Sydenstricker, and others began to report that some pellagrins treated with nicotinic acid made a rapid improvement for a period of days and then began to show signs of other types of deficiencies.[20] The laboratory studies by Sebrell and Onstott, and by Margolis, Margolis, and Smith, showed that these associated symptoms were caused by secondary deficiencies in the diet and that they could be corrected by feeding supplementary vitamins, or more easily by crude products like yeast or liver.[21]

The niacin treatment is dramatic and life-saving, because this vitamin cures the cardinal symptoms of pellagra. But it is now clear that niacin is not a substitute for food, and the *prevention* of pellagra presents the same problem today that faced Goldberger in 1930.

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[14] C. A. Elvehjem, R. J. Madden, F. M. Strong, and D W. Woolley, "The Isolation and Identification of the Anti-Blacktongue Factor," *Journal of Biological Chemistry,* 123: 137, 1938.

[15] P. J. Fouts, O. M. Helmer, S. Lepkovsky, and T. H. Jukes, "Treatment of Human Pellagra with Nicotinic Acid," *Proceedings of the Society of Experimental Biology and Medicine,* 37: 405, 1937.

[16] L. Harris and A. Hassan, "Nicotinic Acid and the Pellagra-Preventing ('P.P.') Vitamin," *Lancet,* 233: 1467, 1937.

[17] D. T. Smith, J. M. Ruffin, and S. G. Smith, "Pellagra Successfully Treated with Nicotinic Acid," *Journal of American Medical Association,* 109: 2054, 1937.

[18] T. D. Spies, C. Cooper, and M. A. Blankenhorn, "Nicotinic Acid in the Treatment of Pellagra," *Journal of American Medical Association,* 110: 622, 1938.

[19] N. Jolliffe, K. M. Bowman, L. A. Rosenblum, and H. D. Fein, "Nicotinic Acid Deficiency Encephalopathy," *Journal of American Medical Association,* 114: 307, 1940.

[20] T. D. Spies and C. D. Aring, "The Effect of Vitamin B_1 on the Peripheral Neuritis of Pellagra," *Journal of American Medical Association,* 110: 1081, 1938; W. H. Sebrell and R. E Butler, "Riboflavin Deficiency in Man (Ariboflavinosis)," *Public Health Reports,* 54: 2121, 1939; V. P. Sydenstricker, H. L. Schmidt, Jr., M. C. Fulton, J. S. New, and L. E. Geeslin, "Treatment of Pellagra with Nicotinic Acid," *Southern Medical Journal,* 31: 1155, 1938.

[21] W. H. Sebrell, R. H. Onstott, H. F. Fraser, and F. S. Daft, "Nicotinic Acid in the Prevention of Blacktongue of Dogs," *Journal of Nutrition,* 16: 355, 1938; L. H. Margolis, G Margolis, and S. G. Smith, "Secondary Deficiency of Vitamin B_1 and Riboflavin in the Blacktongue Producing Diet," *Journal of Nutrition,* 17: 63, 1939.

Goldberger's diet of lean meat, fish, milk, eggs, and fresh fruit and vegetables will prevent pellagra, but the population must have the means to obtain these foods and must be educated to eat them, to protect them not only from pellagra but also from other dietary deficiencies.

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THE NEWER MEMBERS OF VITAMIN B COMPLEX

By C. A. ELVEHJEM

ALTHOUGH the first three members of the vitamin B complex, thiamine, riboflavin and niacin, have received greatest attention in practical nutrition, other members are available in synthetic form and have been shown to be of importance in experimental animals. Both pyridoxine and pantothenic acid are now available commercially in pure form. Pyridoxine has been shown to be essential in the nutrition of the rat, the pig, the chick, and the dog. In the dog an interesting type of anemia results when there is a chronic deficiency of pyridoxine. Pantothenic acid was first shown to be of importance in animal nutrition through the use of the chick, but its essential nature in many different species has now been demonstrated. In black and piebald rats a lack of pantothenic acid causes graying of the hair, which can be cured by the addition of adequate amounts of this vitamin.

There is little doubt about the need for these factors in human nutrition, although specific diseases have not yet been associated with their lack in the diet. The reason for this is undoubtedly related to the wider distribution of these two factors in natural and processed foods than of factors like thiamine and niacin. Meat, milk, vegetables, and cereals are all good sources of pyridoxine and pantothenic acid, and less than one-half of the original amount of these factors present in whole cereals is lost during milling, in contrast to a loss of 90 per cent for thiamine and niacin. Although there is no recognized deficiency of these factors in any extensive group of people, they may play an important role in the treatment of individual cases.

Another factor which has been included in the B complex is choline. This compound is water-soluble, but may also occur in a complex form in natural fats. A lack of choline in the rat causes liver and kidney disturbances. In young growing rats the deficiency may develop in a few days. The actual requirement depends upon the amount and kind of protein in the diet. The symptoms of choline deficiency in the dog are similar to those in the rat, but in the chick a peculiar leg disorder occurs. Clinical work on choline is limited, although very recent work indicates that it is of value in treating liver cirrhosis. Choline should be given consideration in the nutrition program because the modern diets carry a smaller amount of choline than the less refined diets used by our forefathers.

The number of additional factors in the B complex depends upon the kind of animal one uses for the experimental work. If a cow or a sheep were used we might conclude that there are no B vitamins, since evidence is accumulating to show that microorganisms in the rumen of these animals synthesize the known B vitamins. However, the human and many other animals have only a single stomach. Rats and dogs fed a purified diet supplemented with thiamine, riboflavin, niacin, pyridoxine, pantothenic acid, choline, and the fat-soluble vitamins will grow to maturity and reproduce. However, if liver or yeast is added, the rate of growth is improved. There is now good evidence to show that the rat requires biotin, but that under the conditions of the above experiment the bacteria in the intestinal tract make enough of this factor to meet the demand. If a bacteriostic agent such as sulfaguanidine is added to the diet, the necessity of still other factors can be demonstrated. When chicks are fed the above diet they will not grow normally until biotin and at least two additional factors present in natural foods are added. One of these factors may be folic acid, which has been recognized for several years as a growth factor for certain microorganisms.

Work with guinea pigs has shown that these animals need three additional factors present in such natural foods as milk, grass, and yeast. Work with mice has demonstrated the importance of inositol for the normal development of this animal.

Since all of this work has been done on animals, one may question the significance of these factors in human nutrition. However, man is the most highly developed of all the species, and it would not be surprising to find that a combination of all the factors needed by the different animals would be of value in the human diet. In fact, recent work in the author's laboratory indicates that the nutritional requirement of monkeys is more complex than that of rats and dogs, and includes at least some of the additional factors that have been mentioned.

If we look back only five years we find that riboflavin, which is of such great importance in human nutrition today, had not been associated with a specific disease in humans. During the next five years we may find specific functions for factors that are today considered laboratory curiosities. Some of them may not be needed directly in the diet, but if they are to be manufactured in the intestinal tract the kind and combination of food will have an important effect on this synthesis. The lack of one factor may prevent the production of other essential factors. We must also recognize that the need for these factors may vary greatly with age, pregnancy, lactation, and other conditions. Some of these factors may find an important place in the study of senility.

Fortunately, these newer factors are rather widely distributed in natural foods. However, individual foods may show as much variation in their content of the more recently recognized factors as they do in the case of the better-known vitamins. Thus, we must not only recognize the importance of natural foods in the diet but we must use a little ingenuity in compounding a complete diet from these foods. We are all aware of the fact that certain processing procedures have reduced the intake of the better-known vitamins, and some of the newer factors are more easily destroyed than many of the vitamins studied thus far. Our research must therefore be continued. We may learn from it nutritional means of handling diseases which are uncontrollable today, as readily as we now control scurvy, rickets, and pellagra.*

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* For biography, see Dr. Elvehjem's article on "Landmarks in the Progress of the Science of Nutrition," in this volume.

VITAMIN A

By ESTHER L. BATCHELDER

DIETETICALLY speaking, a vitamin A deficiency may be due to a lack of either true vitamin A or certain plant pigments, notably carotene, which can be converted into vitamin A by the body. In general, vitamin A is necessary to promote growth, vigor, and reproductive ability, to maintain the integrity of the epithelial tissues (the skin and the mucous membranes), to prevent abnormalities of nerve tissue and of tooth development, and to enter into a chemical system of the retina of the eye which makes possible adequate perception of dim light. Poor twilight vision may be due to other causes, but in almost all instances is due to vitamin A deficiency. When it has become severe enough to be recognized subjectively, it is known as "night blindness." It is then accompanied by a correspondingly high sensitivity to bright light. This defect is usually fairly severe before other observable signs of vitamin A deficiency appear in man.

Satisfactory means are available for measuring subnormal light perception long before an individual or his friends may be aware of it. These measurements are therefore useful in detecting subclinical vitamin A deficiency and are also of use in selecting people for night flying and other types of activity where excellent light perception is of prime importance. Some investigators report other specific changes in the vitamin-A-deficient eye which affect the transparency of the tissue through which the light must pass to reach the retina. These observations await confirmation by independent workers before final conclusions as to their specific relation to vitamin A can be drawn.

Changes in the surface membranes of the eye, as in all other mucous membranes, are characterized by dry, horny tissue easily attacked by infectious organisms which are harmless to healthy epithelial tissue. Such infections may become so severe as to result in ulceration of the eyeball and eventual blindness unless adequate vitamin A or its precursors can be given in time. Such extreme evidence of vitamin A deficiency is seldom reported in this country, whereas a considerable amount of subnormal light perception has been reported.

Chemical measurements of vitamin A in the blood can be made, but there is as yet a lack of sufficient data to make adequate clinical use of such information. Recently a fluorescent microscopic technique has been applied to observations of vitamin A in samples taken by biopsy from the livers of patients during abdominal operations. Similar observations on other tissues in experimental animals have been made.

Such studies confirm previous conclusions that the liver stores considerable amounts of vitamin A when a diet high in this vitamin or its plant precursors is taken, and indicate also that excessive vitamin A is destroyed by the liver. The liver store helps to tide over periods of shortage. There is still a good deal of study needed to determine how best to build up such a store in the body. A limited number of studies of normal humans on a vitamin-A-deficient diet indicate that some individuals show a decrease in dark-adapting ability within a few days, whereas others may show no sign of deficiency in six months or more. Differences in previous vitamin A intake and hence in body stores may explain such divergent results.

Outstanding animal sources of vitamin A are milk fat, eggs, liver, and fish oils. Green and yellow vegetables and fruits are the plant sources of the provitamins. Differences in man's utilization of the carotene from different foods are being studied so as to make possible calculation of their contribution to the vitamin A value of the diet.

VITAMINS C AND D

By A. BLACK

CONSIDERABLE success has been attained in the control of scurvy and rickets during the last twenty-five years, or since it was proved that these two common diseases are caused by a lack of certain specific factors in the diet. The enrichment of the diet with supplements which are rich in the antiscorbutic vitamin C and the antirachitic vitamin D is now an established practice for a significant portion of our population, and acute scurvy and rickets are uncommon in this country. Still there is ample evidence that milder forms of these deficiencies are far too prevalent. In a report on a recent survey, Jolliffe, McLester, and Sherman state that a large proportion of our population, ranging from 5 to 85 per cent for different groups, presents conditions of undersaturation of vitamin C, and needs dietary readjustment.[22] They also state that approximately 20 per cent of the children of preschool age are cases of active or healed clinical rickets. In the war-stricken regions of the world, no doubt the percentage is much larger. The suffering from scurvy and rickets was very great during the last war, especially in central and eastern Europe.

Vitamin C

Vitamin C, or ascorbic acid, is a water-soluble substance which is required by man, the other primates, and guinea pigs, but not by domestic animals. It is necessary for the formation of collagen, an important constituent of connective tissue and bones, and it performs some important role in metabolism. Severe deficiency of vitamin C leads to fragile capillary blood vessels, hemorrhages in the bones and beneath the skin, and spongy gums. Even milder deficiency may lower the resistance to infections and interfere with the healing of wounds. There is also evidence that the requirements may be increased in certain diseases.

Ascorbic acid is found most abundantly in the more perishable foods, that is, fruits and vegetables. The citrus fruits have long been known to be rich in vitamin C, but many other fruits and vegetables are excellent sources, some of them being much richer than the citrus fruits. Some of the lower-potency vegetables, such as potatoes, may contribute greatly to the daily intake because of the bulk consumed.

In general, ascorbic acid is rapidly destroyed by air, but the rate can be retarded by certain substances and accelerated by others. Fruits and tomatoes and their juices contain acids which protect the vitamin so that it withstands ordinary cooking and canning operations. The nonacidic vegetables lose activity even on standing, especially at higher temperatures and if bruised, because of the presence of an oxidizing enzyme. Cooking may destroy a large amount of vitamin C unless precautions are taken to prevent exposure to air or overcooking. Vitamin C tests serve as a good check on the freshness, the care of handling, and the cooking of vegetables. Modern commercial methods of preserving of foods, such as canning, freezing, and some dehydrating, conserve a considerable amount of the vitamin, but care is still needed after the product reaches the home.

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[22] Norman Jolliffe, James S McLester, and H. C. Sherman, *Journal of American Medical Association,* 113: 944, 1942.

Vitamin C deficiency can no doubt be controlled by the proper selection and handling of fruits and vegetables. But more needs to be known as to the distribution of vitamin C and as to the methods of storage, preservation, and preparation of foods for the table. Pure synthetic ascorbic acid is available, and it is of value in relieving shortages in the diet produced by special conditions.

Vitamin D

Vitamin D is clearly necessary for the efficient utilization of calcium and phosphorus, and hence for the normal growth and mineralization of the skeleton of infants and children, for the maintenance of these structures in adults, and for the mother and the infant during pregnancy and lactation. The requirements are greatest during infancy and pregnancy, when large amounts of minerals are being deposited in the skeleton. Lack of vitamin D produces rickets in the young, a condition which is characterized by soft and easily deformed bones and poor teeth, and osteomalacia in the adult. Vitamin D deficiency is also an important problem for animal husbandrymen. The poultrymen alone use much more vitamin D than is consumed by humans in this country.

Our food supply is very low in vitamin D, although liver and eggs contain appreciable amounts, and milk contains small and uncertain quantities. Cod-liver oil and a number of other fish-liver oils are good sources and have been extensively used for both the cure and the prevention of rickets. The natural source of the vitamin is the sun; there is present in the skin a substance which is converted into vitamin D by the action of certain rays of sunlight. These so-called ultraviolet rays are invisible and are filtered out by window glass, clothing, clouds, smoke, dust, and fog, and little reaches the human body, especially of an urban dweller in cold weather.

In addition to fish-liver oils, there are available two kinds of so-called synthetic vitamin D. One of these is called viosterol or D_2, and is derived from ergosterol, a sterol of plant origin. The other is vitamin D_3, derived from 7-dehydro-cholesterol, a sterol of animal origin. The latter is probably the one which is formed in the skin during exposure to sunlight, and it is also found in fish-liver oils. Vitamin D_2 and vitamin D_3 are nearly equally active for humans and four-footed domestic animals, but chickens and other fowl require many times as much of the former, and it is not extensively used by poultrymen. A number of foods, particularly milk, have been enriched with vitamin D, and they are assisting in the control of rickets.

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PROTEINS

By H. D. KRUSE

IN EPIDEMIC form, protein deficiency has appeared in countries subject to famines, and during wartimes in occupied or ravaged areas, in prison camps, among the armies, and among the general civilian population. From its characteristic manifestation, it has been variously called: war edema, hunger swelling, famine edema, prison dropsy.

In the United States it occurs in both endemic and sporadic forms. Endemically, it appears in certain areas of the South. Sporadically, it occurs throughout the Nation as the result of peculiar dietary habits or endogenous disturbance.

Protein is composed of twenty to twenty-one amino acids, of which about ten or eleven are essential. Since proteins differ in their proportional content of the amino acids and may even be completely deficient in some, the essential as well as the replaceable, they have different biological values. Of protein deficiency in human beings, only the condition due to quantitative—not qualitative—inadequacy is at present known.

Although investigations with experimental animals have shown that inadequate protein limits growth and impairs fertility, the deficiency is recognized in humans not by these general effects but by specific effects. It is characterized by the following sequence of events: decrease in serum proteins, particularly serum albumin; loss of osmotic pressure in the serum; and development of edema (dropsy). It is usually detected by the diminution in serum proteins with or without edema.

Reduction of serum proteins occurs principally in the albumin fraction, the globulin being normal or slightly elevated in mild cases, and reduced only in severe cases. The concentration of albumin has a much greater effect than globulin on osmotic pressure. Following the decreased concentration of serum albumin, the loss in osmotic pressure leads to development of edema. When the diminution in concentration of serum proteins is slight or moderate, the level at which edema appears is influenced by several factors. When the lowered concentration of serum proteins is marked, the operation of these factors contributory to edema is obscured.

Protein deficiency, like other deficiency states, may be induced by inadequate supply in the food, deficient digestion and absorption, failure of formation, failure of utilization, and excessive loss by excretion.

As with other dietary essentials, the deficiency in supply of protein may be relative. For one thing, it varies with the total caloric intake. A level of protein that would be adequate in a high-calorie diet may be inadequate in a low-calorie diet because a part of it is compensatingly diverted from its specific use into supplying energy. Sporadically in unorthodox diets, though they contain sufficient calories, the absolute amount of protein may be low. Usually, however, a diet low in its absolute amount of protein is also low in calories. It is particularly essential, therefore, that persons have a diet containing enough of both calories and protein, and that part of the protein shall have a high biological value.

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DIETARY NEED FOR FAT

By GEORGE O. BURR

THE average American consumes about a hundred pounds of fat annually, deriving about one-third of his total calories from this food material. This seems to be the result of a natural selection of foods according to appetite, and may be considered "normal," although there is no absolute requirement for this level of intake.

Fats can be largely replaced by carbohydrates in experimental diets, but there are ample reasons for recommending that the fat intake be not reduced much below the normal established by habit. These reasons are: (1) fat is our most concentrated source of energy; (2) it spares vitamin B_1 (thiamine); (3) it is an important carrier of the fat-soluble vitamins; and (4) it is the source of essential fatty acids.

1. *Energy source.* With an energy value of 4,085 calories per pound as compared with 1,815 calories for carbohydrates and protein, fatty foods can supply the energy for the heaviest work without undue bulk. They also have the effect of delaying the onset of hunger more than other foods, thus giving a greater appetite satisfaction for a longer period. Its high palatability, digestibility, and energy value make fat most desirable for those whose requirements are increased by hard work above 3,000 calories.

2. *Vitamin-sparing action.* High carbohydrate diets make the greatest demand upon the antiberiberi factor thiamine (vitamin B_1). It is now known that thiamine is directly concerned in the burning of sugars, and in its absence toxic substances accumulate in the tissues. On diets of protein and fat with no carbohydrate, experimental animals grow well and do not develop beriberi even when thiamine is wholly excluded from the diet. If diets contain 25 per cent of fat, the thiamine requirement for good growth and well-being is greatly reduced. At a time when thiamine is so emphasized that enrichment of flour is being widely practiced, it is desirable to reduce the need for this vitamin by plentiful supplies of fat.

3. *The fat-soluble vitamins.* Butter is an important source of vitamins A, D, and E. Enriched margarines carry at least 9,000 units of vitamin A per pound, and several states now have laws requiring this addition to all butter substitutes. It has been estimated that butter furnishes 10 per cent of the vitamin A of the whole diet of the Army. Unfortunately, most refined fats have lost most of their vitamin content through the refining process, and although they are most excellent foods, this lack must be made up by some other part of the diet. They still serve the very useful purpose of rendering more digestible the vitamins and the provitamin, carotene, thus increasing the vitamin value of other foods.

4. *The essential fatty acids.* The term "essential fatty acids" has been applied to several unsaturated acids of plant and animal fats. If only one of these, linoleic acid, is supplied in the diet, no deficiency symptom will occur. These symptoms are scaly skin, retardation of growth, kidney lesions, failed reproduction, and other effects common to many deficiencies. It has been estimated that the diet of the rat should contain at least 1 per cent of linoleic acid, and, lacking quantitative data for man, the same minimum level of intake has been proposed.

Although no direct experiments with man have established his need for linoleic acid, there is extensive proof of beneficial effects in the cure or alleviation of skin troubles. Scaly skin is the most specific outward symptom of fatty-acid deficiency. The scaly skin of rats thus deficient is cleared quickly on the addition of fat to the diet. Similarly, many people with eczema have been greatly benefited by the feeding of a few spoonfuls of an oil or fat daily. The blood of these patients is usually low in the essential acids, and this value returns to normal as the skin clears. These eczematous patients have furnished the most direct proof of man's need for linoleic acid.

The unsaturated acids are specific for skin health. When skin-affecting vitamins, like pyridoxine (B_6) and pantothenic acid, are absent from the diet, the skin symptoms may be alleviated by adequate intake of linoleic acid. It must be concluded that several substances are essential to completely healthy skin. Although most of the experiments have been conducted with rats, there is enough evidence of the effects of the essential acids in man to justify the proposal that an adequate amount of this widely occurring food be supplied in all diets.

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Regional Patterns of Dietary Deficiency

DIETARY deficiency has its regional patterns as well as its income patterns. In some measure these are associated with differences in soils and physiography, as is indicated in Dr. Kellogg's article on "Soils and Nutrition." In certain respects these are determined directly through types of food produced and consumed; but fully as important are broad regional differences in type of economic activity and social status.

The discussions following do not furnish a complete coverage of the geography of diets for the United States. They are intended only to provide some exemplifications of different types of relationships.—J. D. BLACK.

SOUTHERN PIEDMONT AND MOUNTAIN REGION

By ROY E. BUTLER

SINCE 1907, pellagra has been found to be the most common deficiency disease in the southern Piedmont and Mountain region. Less frequently, evidence of deficiencies in vitamins A, C, and D appear. In the years following Goldberger's discovery, it has been well established that pellagra is a symptom complex arising from a deficiency in the diet of the vitamin B complex, especially of niacin. Although the predominant sign may be indicative of a lack of one particular B vitamin, it should be kept in mind that the diet which has been responsible is in all probability also deficient in the other members of the complex, so that there are coexisting subclinical deficiencies.

In studying the diets of this region one is struck by the preponderance of three articles of food: salt pork, corn meal, and sirup. This diet provides an excess of calories supplied by fats and carbohydrates, and contains a subminimal amount of vitamins. The excess of carbohydrates and lack of sufficient vitamin B complex results in an unbalanced metabolism. The importance of the B complex in the oxidation-reduction systems of carbohydrate metabolism seems to be well established. The inclusion of polished rice in the diet, as is done in South Carolina, Georgia, and other southern states, does not help the situation, because here again there is a large amount of carbohydrate with inadequate supplies of the necessary vitamins.

The deficiencies in such a diet are accentuated by the fact that the pork is usually cooked with vegetables and for long periods of time, which has the effect of destroying a good part of the original vitamin B content of both the meat and the vegetables. The amount of vitamin B in pork is dependent upon the amount of lean meat present in the pork, and much of what is purchased is fat back. The corn meal or wheat flour which is used has also been intensively milled in most cases, and does not provide much of the original vitamin content. The recent addition of thiamine and niacin to the wheat flour should help in some measure to correct this difficulty.

These three foods are in themselves excellent sources of energy; but they need to be supplemented much more than is common by fruits and vegetables in season, and by other meats, eggs and dairy products. Even with the granting of loans and training in the production and use of foods, the Farm Security Administration has found that important remediable physical defects still persist, and are responsible for the inability of many of their borrowers to progress. They also find that a substantial percentage of their people are infested with hookworm, which serves to increase the need for an adequate diet. Federal and state health agencies have been trying to eradicate the hookworm evil by the construction of proper sanitary facilities.

Education by various agencies during the past two decades has, nevertheless, served materially to change the dietary habits of this region. Knowledge of the uses and means of culture of different vegetables and fruits has led to a more varied diet. The attempt to increase the number of dairy cattle has resulted in the more extensive use of milk and its products. An even greater effort should be made to increase the use of dairy products. The members of the medical profession have awakened to the dietary needs of their communities, and to a realization of the importance of proper food in treatment of prevailing diseases.

Until recently the variety of vegetables used has been rather limited, and the season at which they are available, short. This has meant that the amount consumed in a year is small. Little attempt has been made to preserve vegetables by canning or otherwise, usually because of ignorance of practicable methods and lack of essential equipment. At times it has been necessary to develop appreciation of canned foods before wholehearted co-operation of the people could be secured.

In conclusion, it may be stated that pellagra and associated B complex deficiencies are prevalent in the southern Piedmont and Mountain region. There are two broad objectives to be attained that should help to correct this serious situation. First, those with adequate incomes should be educated to purchase and use the proper foods. Second, those with inadequate incomes should be educated to produce and preserve the proper foods so that an adequate diet is available throughout the year.

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NORTH AND NORTHEAST

By G. Dorothy Williams

THE north and northeast present a paradox. They have more than their share of the Nation's wealth, but much contrasting poverty. They are rich in farm land, but local food supplies are inadequate for the concentrations of population. The milk supply more than meets the demand, but studies show marked calcium deficiency.

The studies conducted by the United States Bureau of Home Economics[1] of a cross section of nonrelief families in both rural and urban areas show that in the north 30 per cent of the families had good, 45 per cent had fair, and 25 per cent had poor diets. They concluded that the money spent for food and the size of the family were the limiting factors rather than the degree of urbanization, although farm families were better fed for the amount of money spent and in proportion to the amount of farm-furnished food and the knowledge and skill of the homemaker. All families were most likely to be deficient in calcium and vitamins A and C, although at the lower levels of income, diets tended to be low in all nutrients. If these findings had been corrected to meet the standards of the National Research Council, published last spring, thiamine and riboflavin probably would have been added to the list of deficient nutrients.[2] These observations are borne out by other food consumption studies.[3]

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[1] H. K. Stiebeling, D. Monroe, C. M Coons, E. F. Phipard, and F. Clark, *Family Food Consumption and Dietary Levels,* U. S. Dept. of Agriculture, Misc. Pub. 405, 452, 1941; H. K. Stiebeling and E. F. Phipard, *Diets of Employed Wage Earners and Clerical Workers in Cities,* U. S. Dept. of Agriculture, Circular 507, 1939.

The figures given above refer to family groups. Morey found in the New York farm families that she studied that there were differences in adequacy within the family group. The men of the family had the most adequate diet, the homemaker next, and the children least. None of the studies take into account waste, cooking losses, or variation in nutritive value due to soils, method of handling, storage, and other factors.

It is conceivable, also, that conditions due to our climate should influence the nutritive state. With our long winters, fruits and vegetables must be stored, canned, dried, or preserved in some way, or shipped in from distant points. In many farm and village homes, where the family plans to can and store the winter's supply, the servings of fruits and vegetables decrease or disappear entirely before the spring brings a new crop. In addition, the vitamin content of the stored food decreases as the period of storage increases.[4] The studies carried out in Maine by Crane, Woods, Murphy, and Clayton [5] with school children showed that blood plasma ascorbic acid was much lower in the spring than in the winter. Only 2 of 86 children in one experiment had high enough values in both seasons, and 46 per cent in the winter and 63 per cent in the spring failed to reach the low standard of 0.40 mg. Clayton also comments upon the prevalence of anemia during the winter in Maine. Mack, Smith, Logan, and O'Brien found rural subjects more nearly uniform in hemoglobin values than urban subjects, with preschool children having the lowest values.[6]

Because of the variable amount of sunshine in winter, the amount of clothing worn, and the time spent indoors, it is surprising that there is not more evidence of vitamin D deficiency in the north than there is. Despite the accepted use of vitamin D preparations for infants and young children, Levy and Silver report clinical evidence of rickets in 37 of 100 infants nine months of age and over in Newark, New Jersey.[7] In a study made in New York State in 1934, active rickets were found in 7.3 per cent and healed rickets in 28.3 per cent of 3,500 preschool children.[8] Although some form of vitamin D is recommended for pregnant and lactating women, Williams and Fralin found that 514 pregnant women in Philadelphia received from 0 to 140 International Units daily.[9] Clayton found that none of the mothers of her group of children had taken any form of vitamin D during pregnancy.[10] Similar conditions were found in New York State.[11]

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[2] N. Jolliffe, J S. McLester, and H. C. Sherman, "The Prevalence of Malnutrition." *Journal of American Medical Association,* Vol. 118, No. 12 (March 1942), p. 942.

[3] V. Britton, *Food Consumption of 538 Farm and 299 Village Families,* Vermont Experiment Station Bull. 474, 1941; N. B. Morey, *A Study of the Food Habits and Health of Farm Families in Tompkins County, N Y.,* Cornell University Experiment Station Bull. 563, 1933; Esther S. Davies, *The Food Consumption of Rural School Children in Relation to Their Health,* Massachusetts Agricultural Experiment Station Bull. 241, 1928.

[4] E. Murphy, *Regional and Varietal Differences in Vitamin C Content of Food Crops in Relation to Vitamin C Status,* Maine Agricultural Experiment Station Bull. 405 (1941), p. 438.

[5] Mary M. Clayton, *The Food Habits and Physical Condition of Children in Selected Communities in Maine,* Maine Agricultural Experiment Station Bull. 401, 1940, Bull. 405 (1941), p. 431; M. M. Crane and P. W. Woods, "A Study of Vitamin C Nutrition in a Group of School Children," *New England Journal of Medicine,* 224: 503–9, 1941; E. Murphy, "Dietary Evaluation of a Study of Vitamin C Nutrition in a Group of School Children," *Journal of Nutrition,* Vol. 21, No. 5, May 1910.

[6] P. B. Mack, J. M. Smith, C. H. Logan, and A. T. O'Brien, *Hemoglobin Values in Pennsylvania,* Mass Studies in Human Nutrition, Journal Series of the Pennsylvania Agricultural Experiment Station, paper No. 99.

The income factor

In the north as elsewhere, inadequate income with insufficient money spent for food is more responsible for dietary inadequacies than any other one factor. Mack, Smith, Logan, and O'Brien in Pennsylvania report that in their study of children from a college community and from an industrial community of lower economic status, the children from the community in which the income and educational status of the parents were higher, exhibited better nutritional status.[12] As reported in an earlier study, Wiehl and Kruse found much greater evidence of ascorbic acid, iron and riboflavin, and vitamin A deficiency in New York City boys and girls from low than high income groups.[13] Mack and Saunders found the same result with A deficiency.[14]

The northeast has an unusually high proportion of workers in war industry. Part at least of their defects in feeding will be corrected as the workers' incomes increase. On the other hand, investigations now under way in factories show that the food selected by workers is too frequently inadequate, even when an adequate diet is offered.[15] In Hartford, Connecticut, lunch trays of workers passing along a cafeteria line were surveyed and 43 per cent classified as good and 57 per cent as unsatisfactory.[16] Poor working conditions will have to be improved as well as an adequate diet provided.[17] The tension under which these people are working, the long hours, the lack of proper rest periods, and the lack in some cases of a lunch hour, as well as improper food, will result in undermined health and slowing-up of war production.

Continuing research will broaden the

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[7] Julius Levy and H. B. Silver, "Can Rickets Be Eliminated from a Large City?" *Archives of Pediatrics,* 56: 96, Feb. 1939.

[8] Elizabeth M. Gardiner, *Annual Report of the Division of Infancy, Maternity and Child Hygiene* (New York State Department of Health, 1934), p. 119.

[9] P. F. Williams and F. G. Fralin, "Nutrition Study in Pregnancy," *American Journal of Obstetrics and Gynecology,* 43, A, Jan. 1942.

[10] Mary M. Clayton, *op. cit.,* note 5.

[11] H. Monsch and G. Dorothy Williams, Cornell University, unpublished material.

[12] P. B. Mack, J. M. Smith, C. H. Logan, and A. T. O'Brien, "Nutritional Studies of Children in a College Community," *Journal of American Dietetic Association,* Vol. 18, No. 2, Feb. 1942.

[13] D. G. Wiehl and H. D. Kruse, "Prevalence of Deficiency Diseases in Their Subclinical Stage," *Milbank Memorial Fund Quarterly,* Vol. 19, p. 241.

[14] P. B. Mack and A. P. Saunders, "The Vitamin A Status of Families in Widely Different Economic Levels," *American Journal of Medical Science,* Vol 199 (May 1940), pp 686–97.

[15] New York State Department of Health, unpublshed material.

[16] National Research Council, Committee on Nutrition in Industry, *The Food and Nutrition of Industrial Workers in War Time,* No. 10, April 1942.

[17] J. M. Ruffin, "The Diagnosis and Treatment of Mild Vitamin Deficiencies," *Journal of American Medical Association,* Nov. 1941.

picture as it is now presented. Studies under way that continue the research already reported, and experiments on soil, processing of food, and industrial problems, will open new horizons, answer some questions, and present new ones.

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THE GREAT PLAINS REGION

By RUTH M. LEVERTON

ONE could scarcely find another region where diets are influenced by as many different characteristics of climate, racial background, and economic status as in the Great Plains.[18] This lack of homogeneity makes it impracticable, if not unreasonable, to expect a single dietary pattern to be equally representative of the Scandinavian wheat-grower of the Dakotas and the Indian basket-maker of New Mexico. For this reason the present report deals primarily with only one section, the northern portion, of this varied region.

The one characteristic that sets this region apart from most of the rest of the country is its semiarid climate, which makes the growing of home gardens and most forms of orchard fruit difficult. Scattered through the region, however, are irrigated areas where vegetables can be grown, and not far to the west in the Rocky Mountain foothills and valleys are some highly developed fruit sections. Historically, the typical small-ranching and dry-farming family has subsisted on a diet high in meat and cereals. Recently, however, small earthen dams built across draws have provided water for farm gardens as well as for cattle, and some fruit and vegetables have been available in local stores for the whole community. Also, the Shelter Belt plantings often include a row of wild plums.

The records of food consumption in the Consumer Purchase Study made by the Bureau of Home Economics and the Bureau of Labor Statistics in 1935–36 are not as useful for our present purposes as might be, since in the final reports the records of farm and urban families in the Plains are combined with those of the Mountain region.[19] Then, partly because of the relatively few records and partly because of their similarity to those of other regions, the Plains and Mountain records are absorbed into still larger geographical groupings, with the final result that again there emerges no general dietary pattern peculiar to the Great Plains as a whole.

Diets for the west (which includes the Plains and Mountain as well as the Pacific region) at the most usual levels of money value of food—$2.08 to $2.76 per week per food-expenditure unit—were most often deficient in calcium, vitamin A, and ascorbic acid. The low ascorbic acid values were associated with the low consumption of fresh fruits and vegetables, especially citrus fruit and tomatoes. But in the west, fresh vegetables were the first food group to be used in larger quantities as soon as incomes and money spent for food increased, and the rate of increased consumption was greater for fresh vegetables than for eggs, milk, or fresh fruit.

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[18] The region designated as the Great Plains is a strip three hundred miles from east to west that extends from Canada to Mexico. It includes the western part of the Dakotas, Nebraska, Kansas, Oklahoma, and Texas, and the eastern part of Montana, Wyoming, Colorado, and New Mexico. This represents about 11 per cent of the total area of the United States and contains about 6 per cent of the population of the country.

[19] Stiebeling, Monroe, Coons, Phipard, and Clark, *op. cit.*, note 1.

Although the average calcium intake of the families that were studied in urban areas of the Plains and Mountain region was higher than that in the other sections of the country, it did not reach the recommended allowance, and the average calcium intake of the farm families in this region was not as high as or better than in other sections.

Definite evidence of dietary deficiencies has come from a recent survey of the dietary habits of almost three thousand freshman girls in midwestern colleges.[20] The sample reaches well to the east of the Great Plains, but the results are probably reasonably indicative of the food habits of the population of the northern Plains, and of the families from which the girls come. The enrollment of state universities includes also young people from every socioeconomic status. When the one-week records were summarized according to the number of servings of some of the essential food groups per person per week, it was found that the percentages of freshman girls reporting seven or more servings per week were as follows: milk to drink (one glass), 68 (more than half of these did not have as much as fourteen glasses a week); green and yellow vegetables, 54; citrus fruit or tomato, 44; whole grain product, 33; meat, fish, poultry, 86.

Considering that seven servings a week of these foods is part of the recommendation for an adequate diet (except in the case of milk when fourteen servings is the minimum allowance) the results show a general dietary pattern that is far from adequate—too little calcium, vitamin A, ascorbic acid, and vitamin B complex.

Serious dietary inadequacies were shown when one hundred metabolism studies were made of young women who were doing light housekeeping and living on self-chosen diets.[21] Only 9 of the 100 subjects had diets that met the recommended standard for the nutrients studied—calcium, phosphorus, iron, and protein; 91 were below the standard in one or more of the nutrients, and 21 were below standard in all four of the nutrients. The metabolic performance of these young women indicated further that the suboptimal intakes did not give adequate opportunity for the storage of the nutrients for growth and maturation.

In some sections of the Great Plains there is a lack of iodine in the soil and the water, which means a serious dietary deficiency to both animals and human beings unless measures are taken to supply this essential mineral. One small section in South Dakota is well known for the selenium poisoning of its soil and water.

A physical appraisal of the Farm Security in one typical county in this region gives further evidence of dietary inadequacies.[22] The report on the 250 children examined states that although most of the children were within normal limits of the height-weight-age tables, "they presented a uniform picture of pinched facial expressions, flabby musculature, and prominent abdomen." Several had indications of enlarged hearts that may have been caused by vitamin B_1 deficiency. Analysis of a cross section of the diets showed little or no variation from a high carbohydrate, low protein, low ascorbic acid, and low vitamin B complex pattern. In the 234 children examined there were found 108 carious deciduous teeth and 121 carious permanent teeth, while in 148 adults there was need for the removal of 990 teeth.

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[20] May S Reynolds, Margaret A. Ohlson, Martha S Pittman, Hughina McKay, Mary Brown Patton, Eva Donelson, Ruth Leverton, Ella J. Meiller, and Mary H. Bitting, "The Dietary Habits of College Students," *Journal of Home Economics*, Vol. 34, No. 6 (June 1942), p. 379.

[21] Ruth M. Leverton and Alice G. Marsh, *One Hundred Studies of the Calcium, Phosphorus, Iron, and Nitrogen Metabolism and Requirement of Young Women*, Nebraska Experiment Station Research Bull. 125, 1942.

[22] Report on Medical Clinic Held in Howard County, June 1940, personal communication.

The opinion prevails in some quarters that the general level of income is high in the Great Plains region. This is true for those who raise cattle on a large scale, but certainly not for the ordinary farmer who can afford to raise only a few cattle and attempts to supplement this with crop-producing. A large proportion of the families entering this region have never had resources enough to carry them over the drought periods. In several dry years in the thirties, thousands of farm families were receiving work or other forms of relief.

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THE SPANISH-AMERICANS OF NEW MEXICO AND ARIZONA

By CHRISTINE A. HELLER

IT IS well known that marked sectional differences in food customs exist in the United States and that in some sections large groups of people adhere closely to a limited food pattern with a definitely local character. The Spanish-Americans of the southwest have such a fixed traditional dietary.

The Spaniards colonized the southwest over four hundred years ago. Their descendants, called Spanish-Americans, have remained a distinct cultural group. This is due partly to the difference in language and partly to the fact that until recently the roads have been poor, thus keeping them isolated from the rest of the country.

The present-day Spanish-American diet is really an adaptation of the Indian diet. At the time of Coronado's expedition and later Spanish expeditions colonizing the southwest, the Indian diet was made up of turkey, maize, beans, squash, piñon nuts, berries, and such game as bison, deer, antelope, and rabbit. The Spaniards brought in certain foods from the Old World—wheat, oats, barley, rye, turnips, cabbage, onions, carrots, melons, peaches, pears, apples, grapes, coffee, and tea. From the country to the south of the Rio Grande they brought Irish and sweet potatoes, tomatoes, chili peppers, and chocolate. They also introduced cattle, sheep, goats, and poultry.

We know that there are many different food patterns throughout the world, and that these food patterns depend on the resources and ingenuity of the different cultural groups. Many of these traditional food patterns, according to our present knowledge, seem to meet the nutritional requirements satisfactorily. This is true of the old Spanish diet. But for the majority of the Spanish-American people living in the southwest today, the diet is limited to corn, beans, chili peppers, lard, flour, and coffee. Fruits and vegetables are not eaten in abundance, except in certain irrigated areas during the growing season. Wild greens are used in the spring, such as purslane, wild asparagus, and quelites (lamb's-quarters). Quelites are often dried for winter use. Despite the fact that Spanish colonizing expeditions introduced cattle, goats, sheep, and poultry into the southwest, meat, eggs, milk, and cheese are not used extensively. These foods are not foreign to the Spanish diet, nor are they disliked by the Spanish peoples. On the contrary, they are ingredients of many of the old Spanish recipes. But they are used much less frequently today because of the low incomes of the present population.

Income status

The economic status of the Spanish-Americans of today is pretty well indicated by the following statement regarding New Mexico (the majority of Spanish-Americans of the southwest live in New Mexico):

> New Mexico is primarily an agricultural state. The country people of Spanish descent in the central sections are all small farmers fighting fatalistically the reluctant earth with ancient irrigation systems and inadequate tools. Rich farming lands there are, but they form a minor part of the whole. Wherever a stream ventures out of the mountains, there, for as far as it remains above the surface, will be found little farms using the precious water. Often they are hidden in the folds of the hills, where the people, forming tiny hamlets, live now much as their forebears have lived for the past two or three centuries. . . . Although its land area ranks fourth in extent among the forty-eight states, New Mexico has a water area of only 131 square miles, the smallest of any state in the Union. The conservation of the state's water resources is therefore a matter of the utmost urgency, particularly since the land is largely composed of vast arid and semiarid districts which require irrigation for abundant productivity. Water is thus more important to the state's present and future welfare than all the coal or gold or minerals within its borders. . . . Some dry farming, or farming dependent entirely upon rainfall, is carried on in the higher altitudes in the Estancia Valley and above the northeast tier of counties, with periodic loss of crops due to drought. Plant adaptation has probably received the least attention among conservation measures.[23]

Despite the fact that New Mexico is considered primarily an agricultural state, many foods are not produced in enough quantity to supply local needs. Of the 31 counties in the state, only 4 produce more potatoes than are needed in the county; 12, more fruit than needed; 2, more tomatoes; 9, more eggs; and 4, more milk.[24] This means that most of these foods must be brought in from other states; but this takes money, which is very scarce in many communities. Industry is not well developed in the southwest. Many Spanish-Americans have to depend on agricultural labor outside the state to provide them with cash. Their problem is pictorially presented in Miscellaneous Publication No. 479 of the United States Department of Agriculture.[25]

Analysis of diet

A very rough analysis of the diet found most frequently in Spanish-American homes shows that it is low in calories. It is low in protein, both in kind and in amount. Most of the protein comes from beans, and this protein is "incomplete," since it does not contain all the amino acids necessary for growth. The diet is usually low in

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[23] *New Mexico, A Guide to the Colorful State,* American Guide Series, New York: Hastings House, 1940

[24] "Annual Farm Production of Potatoes, Fruit, Tomatoes, Eggs and Milk per Rural Resident in New Mexico," Extension Service, State College, New Mexico, mimeographed material.

[25] Irving Rusinow, *A Camera Report on El Cerrito, a Typical Spanish American Community in New Mexico,* U. S. Department of Agriculture, Misc. Pub. 479, 1942.

"good" protein foods, such as milk, meat, and eggs. Calcium, one of the most important bone- and tooth-building materials, is also low. Most of the calcium is furnished by beans, or in some areas by "hard" water in addition. Very little milk is used. The diet is apparently adequate in iron—one of the most important blood-making minerals—but anemia is commonly found at maternity service clinics. We knew that good-quality protein, as well as iron and copper, is necessary for hemoglobin formation.

Except in the spring and summer, when wild greens and garden produce are available, chili peppers and squash are sometimes the sole foods contributing any appreciable amount of vitamin A. The vitamin B content of the diet of farm families is apparently adequate, because of the prominence of beans, an excellent source of this vitamin But this is not true of families living in towns with little or no means of livelihood, as is borne out by the prevalence of pellagra—not so great as in the South, but bad enough.

Vitamin C is one of the vitamins most poorly provided for in the Spanish-American diet. Fresh chili peppers are one of the richest sources of this vitamin, but unfortunately they are usually dried and ground and used as a condiment to flavor foods. Cabbage, another good source of vitamin C, is used extensively, but most families cook it for a long time in large amounts of water and then throw away the cooking water. Cabbage cooked a short time has an entirely different flavor and texture from that cooked a long time. A taste for this must be acquired, as for any new food.

Education in the newer knowledge of nutrition and food preparation is undoubtedly an important factor in improving the present-day dietary of the Spanish people of the southwest. But the most important factor is income. It is not without pertinence in this connection that New Mexico and Arizona have infant mortality rates of over 100—nearly twice those of the southern states.

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Case Studies of Nutrition

IN THE end, much of the analysis and treatment of nutritional inadequacy gets down to cases of actual individual persons, families, or communities living out their days in the real world. General talk and reading matter about faulty diets and their nature and effects does not commonly come within the notice of those who need it, or if it does, they at once begin thinking of how "someone really ought to do something" about the poor diets of the H—— family living down the cross road or back up Scanty Grub Alley. It often happens, too, that some mother who is already doing a pretty fair job of feeding her brood becomes panic stricken and begins to lose sleep over it.

Fortunately the number of nutrition workers who devote their time largely to working with individual cases is definitely increasing. Part of this has come about because those in charge of social case work have come to recognize that faulty nutrition often is a major cause of the "maladjustments" they encounter; and part of it because of a growing realization by public health officials of the part that bad feeding plays in their problems. At the same time, the Home Economics Extension Service has become more and more aware of the nutrition aspects of its job.

It seemed highly desirable, therefore, in planning this volume, to have some of the different types of nutrition case workers report some typical examples that they or their associates have handled. Some of them were asked to report an assortment of cases showing different income levels, population groups, and types and qualities of diets, a few of them being definitely in the adequate category or near to it. Others were asked to give particular types of cases. Following is a selection from the cases that have been reported. Dr. Lydia K. Roberts, chairman of the Department of Home Economics of the University of Chicago, assisted in making up the list of contributors to the article; also Dr. Hazel K. Stiebeling, assistant chief, Bureau of Home Economics in the United States Department of Agriculture.—J. D. BLACK

RURAL KENTUCKY

By MARJORIE GRANT

WE HAVE not found that dietary deficiencies come singly nor are they usually due to a single cause, but rather to many contributing factors. Perhaps the chief one of these and the most difficult for us to change is family custom.

Case 1. Jennie W. Pellagra and vitamin B deficiency

This patient was interviewed in the venereal disease clinic of the county health department in May. She looked fifty but said she was only thirty-five. She was thin and hollow-chested. Both arms below the elbow were covered with a red rash, slightly scaling, which looked much like the rash commonly seen with measles. This also covered the face and neck, following the neckline of her dress. Her tongue was glossy, with deep fissures; eyelids were red-rimmed.

The rash has appeared each spring for the past four or five years upon exposure to the sun as the patient worked in the garden. She had been treated by various doctors for hives and food allergy, with no relief. Usually the rash disappeared by late summer. She was constipated and took "Black Draught" each day. Her food at that time appeared to be fairly adequate. For breakfast she usually had two fried eggs, "white" meat (fat back) and gravy. For dinner she had one-half cup of beans, three baked potatoes, "China Bones" (spare ribs), two slices of bread, and one glass of buttermilk. She never ate an evening meal. She lived with her sister near the edge of town and did washings for a living. They have a small garden, but last year were not able to can any foods or to store any for winter use.

The pellagra was probably due to a multiple deficiency resulting from an inadequate diet for many years. It may have been due to economic conditions, but probably was the result of ignorance and poor eating practices throughout life.

Case 2. Mrs. H. Multiple deficiencies

This family lives ten miles from town on a hundred-acre farm rented from an elderly lady who never visits the place. The roads from town are extremely bad. The land is good and crops are excellent. The chief money crop is tobacco. The tobacco barn is in good shape. The farm has a tractor. No repairs have been made on the house since the tenants moved there five years ago, and as they plan to buy a farm of their own some day, they will not consider paying for any repairs themselves. There are no toilet facilities and no screens. Drinking water is obtained from a cistern which "probably needs a good cleaning."

There are four children, the youngest fifteen months old. The two older boys are registered in school, but were not able to attend much from July to September because their father needed them at home. The mother finished the sixth grade and her husband the fifth. Home economics is taught in the county, but not below the first year of high school. There is a home demonstration agent and county agent in this county, but neither Mr. nor Mrs. H. have attended any meetings. They have heard about Farm Security from some relatives who have secured loans.

The baby was breast-fed until a month ago; now eats with the rest of the family. She will not drink milk unless sirup is added—about a tablespoonful to a glass. (This was a white corn sirup, labeled "Baby Syrup.") She likes white bread, candy, fried potatoes, and gravy. Tomatoes give her the "colic." The baby had diarrhea "off and on" all summer. The mother boils the milk as the nurse told her, but since the baby refuses boiled water, she does not bother about that. The baby is thin, underdeveloped, extremely white and pale. Eyes are dull and the child appears tired and listless, whining frequently. She does not walk yet and has had practically no sun during the summer.

The mother has a poor posture, hollow chest, and protruding abdomen. A midwife attended her at the birth of the last baby, and lacerations received during delivery have not been repaired. No medical attention was received before or after delivery. Until she weaned the baby, she felt continually tired and "worn out." Her appetite is poor, and along with other members of the family she has had diarrhea during the summer. This is accepted as regular "summer complaint." This particular situation is probably not due to lack of money, but to standards so low that healthful living is impossible.

Case 3. C—— Creek, Kentucky. Multiple deficiencies

This is an isolated community with perhaps 150 families living about fifteen miles from a small town. Roads to town are more or less impassable during rainy weather and in the spring. Doctors charge $15 to $20 to make a visit there. There has been considerable intermarriage and not many outsiders have been brought into the community for many years. The farm land is poor—low, steep hills, with leaching of the soils by rains and erosion. Tobacco is the chief money crop, but income from this usually does not exceed fifty or one hundred dollars a year for a large family. A little money is made now and then from road work or lumbering. A few families have a cow, not many have more than one. There are not more than half a dozen cars, and these are owned by the well-to-do farmers that have a little rich bottom land. School is open from July through January. There are no buses even to take the older students to high school in town.

There is no home demonstration agent in the county, and few families in this section use the services of the county agent. Farm Security has a large case load in this area but not many in this immediate community, because most of the farms are not below subsistence.

Information about family meals and methods of cooking was secured from twenty or more families in early June. This was before garden produce was available. All canned foods from the previous year were long since used up. Early wild greens had been used a few times, but were now too large to use. The lard supply from the fall was usually gone and there had been little meat for many months. Cabbage had recently been distributed by the Surplus Commodities office, and a few families had had cabbage two or three times a day.

The following day's meals of Family "R" are typical: breakfast—fried potatoes (white), biscuits (white), gravy (made with drippings); dinner—boiled navy beans, fried potatoes, corn bread; supper—cold boiled beans, cold potatoes, corn bread.

This family's purchases from the neighborhood store included bolted meal (degerminated because it keeps better), self-rising white flour (not enriched), lard, and an occasional can of fruit, tomatoes, or fish. The family owned a few chickens, but none were laying. The cow was dry. Money income the previous year from tobacco was seventy-five dollars. The father has tuberculosis but there is no state sanatorium for him to go to. One daughter has tuberculosis and has been persuaded to sleep in a cabin on the lawn. There are six other children from four to nineteen. The oldest son is in the Army and sends a few dollars home occasionally.

According to the health officer, gums in this community are soft and spongy, bleeding easily with slight pressure, and signs of vitamin C deficiency are observable from December on. Goiter is frequent in older women, and an enlarged thyroid observable in many of the children. The adults age early, many of them appearing to be forty or so when they are only twenty or twenty-five. Few have ever had any dental care.

After consultation with the nurse midwife in the church community center, we decided that the usual diet was probably deficient in vitamin B complex, vitamin C (except for a short period during the early spring and summer), calcium, phosphorus, iodine, protein, and vitamin D. Cooking practices in vogue did not save or preserve the minerals and vitamins. Raw foods were not ordinarily used. A school lunch was planned to include the following: evaporated milk and American cheese, vegetable soup at least once a week with fresh beef or liver, canned grapefruit several times a week, yeasted peanut butter on oatmeal bread (we thought it would be easier to introduce a new type of bread than to change biscuits from white to whole wheat), and raw vegetables such as carrots, turnips, and cabbage. Cod-liver oil was purchased and distributed to pregnant women and young children. Iodized salt was used in the lunch room and made available in the local grocery. Preparation and serving of the lunch was done by the mothers to provide them with an opportunity to learn.

Teachers commented on better attention and attendance in school and fewer colds during the winter. The nurse has noted that better babies are born with fewer complications during pregnancy; and that there is a more agreeable, friendly attitude on the part of all residents, which may be due to better nutrition.

Marjorie Grant is nutritionist of the Kentucky State Department of Health.

THREE MISSISSIPPI NEGRO FAMILIES

By DOROTHY DICKINS

Case 1. A poorly fed Negro cropper family

"This year has been a bad year for us," remarked Sam Stamp, a Negro sharecropper. "Our cotton was drowned out and we had to give the corn and shotes to the landlord to pay on our debts." In the past Sarah earned a little by laundry work, but her health is so poor now that she has given it up. She has a "breaking out" on her hands.

The value of the income of this family from all sources during the schedule year was $232, only $17 of it from food furnished by the farm. There had been a few vegetables in the garden—cabbage, collards, and okra; 5 bushels of sweet potatoes; 10 gallons of sirup. The family owned 10 hens, but so poorly fed were they that egg production was limited to the spring months. About $8 a month in cash had been spent to purchase the food for this family of three (husband 54 years, wife 47 years, and nephew 12 years), and this mostly for staples, such as meal, fat, and peas. A typical menu was: breakfast, corn bread and sorghum; dinner, corn bread and peas; supper, corn bread, sorghum, and peas.

Sarah was asked about the "breaking out" and stated that it might be pellagra, as she had had pellagra before. At that time the Red Cross county association nurse (there was not a full-time public health officer in the county) had given her yeast. She had not asked for it this time. Neither Sam nor the nephew had the "breaking out."

Sarah thought that the diets of Sam and her nephew might be somewhat better than hers, as Sam bought some food, as fish and meat buns, on his visits to town; her nephew sometimes ate in the homes of more prosperous neighbors, and when they did have eggs, she was inclined to let the men folks have them. "Her digestion was no good, anyway."

The landlord of the family stated that they owed him $150 at the beginning of the schedule year and $30 more, or $180, at the end of the year. He rated the members of this family as "poor workers."

Case 2. A poorly fed Negro urban family

The Johnson family, a Negro wage-earner family of five members (husband 33 years, wife 27 years, daughter 9 years, son 7 years, and son 5 years), residing in a small southern town, earned $483 during the past year. "If we had more money, we would buy more meat, more salmons, and more cheese," Ella Johnson says, "also more milk. We pay $1.25 a week for these three rooms, then John spends a lot keeping up an old car. Our doctor and drugs cost us more than $40. The three children had colds all winter long, and Mary, the oldest, nearly had pneumonia. Her sickness cost $18. My health? Well, I'm good for nothing. Don't seem to have any strength no more. Have stomach trouble. Can't seem to digest nothing. John? Well, he's all right, only a twitch of rheumatism now and then.

"Our food? Well, we spends about $5 a week. Flour, grease, meal, salt, soda, rice, Louisiana cane, and meat [fat back] have to be bought, and something to boil. Somehow, we can't get along without something to boil—turnip greens, collards, cabbages, peas. What did we have to eat today? Well, for breakfast, we had fried meat, biscuit, gravy, coffee, Louisiana cane; for dinner, we had turnip greens and corn bread; and for supper we had sausages, turnip greens, bread, and Louisiana cane. How did I cook the greens? Well, I puts a piece of meat on in water and boils and then adds the greens and cooks about two hours. Yes, we eats the pot liquor, the children crumble their bread in it.

"Don't we buy milk? Yes, some for cooking and sometimes to drink. Bread [corn bread] isn't very good without it's made with milk."

The diet of this family fell below standard in most of the nutrients. It was especially low in calcium and vitamin C.

Case 3. A well-fed Negro farm family

When I asked Mark Smith, a Negro farm owner, if he had more time or more money or more land, what foods he would produce more of than he now produces, he replied, "We raise pretty near everything that grows. We might change the weather sometimes."

Last year this family of ten members (the husband 48 years, the wife 36 years, and eight children ranging from 1 to 16 years) consumed 1,100 gallons of buttermilk, and all the butter churned from this milk; 200 gallons of whole milk, 200 dozen eggs, 400 pounds of dressed pork, 220 pounds of poultry, 250 pounds of beef, 25 pounds of fish, 4 bushels of peanuts, 16 gallons of sorghum sirup, 20 bushels of sweet potatoes, and 15 bushels of corn meal, all home-produced.

The Smiths had a year-round garden, including vegetables not generally found in gardens of the south, such as spinach and carrots. "The children are crazy about carrots," said Mark. "They go to the garden and eat them raw." Martha, the wife, showed with pride 600 quarts of food she had canned. Martha cooks vegetables in an aluminum steamer until they are tender. She says she learned to cook from her mother, who cooked for a home demonstration club leader. She has also had help from her Farm Security Administration supervisor. The Smiths are buying the farm on their own, but the FSA is helping them to finance their livestock program.

Mark was a sharecropper for sixteen years and a renter for fourteen years. Two years ago he "bargained for" the farm on which the family resides, 80 acres in the poorest section of the county. The farm family income last year was $1,155, made up as follows: $425 net cash income; $200 increase in livestock and crops stored for sale; $20 rental value of house; and $510 value of farm products used by the family. The FSA rates this family in the B class, as needing minimum supervision.

No member of the Smith family was sick in bed during last year. "We are really a healthy family," they say. The diet of this family is "good," that is, it supplies an adequate margin of safety above the minimum amount of protein, minerals, and vitamins needed to maintain the body.

Dorothy Dickins is head of home economics research in the Mississippi Agricultural Experiment Station. Her studies of southern rural families and their problems are widely known.

FROM FLORIDA'S LEACHED LANDS

By OUIDA DAVIS ABBOTT

I COULD just as easily report data on thirty or even three hundred children. However, the case histories would all be quite similar—differing a bit in degree but not in kind.

Case 1.

Female, age 6 years; weight 35 lbs.; height 42 inches; hemoglobin 7.83 grams; puffy hemorrhagic gums; eyes, red, dry, conjunctiva injected; skin, rough, scaly, discolored, lifeless; teeth, 3 carious. Progress in school, poor. Family live on deficient land, poor and ignorant; diet, deficient in milk, fruit, eggs, and vegetables. House, 1 room, 7 in family.

Case 2.

Male, 9 years, weight 37 lbs.; height 45 inches; hemoglobin 6.26 grams; gums, puffy, discolored, bleeding; teeth loose; eyes, hemorrhagic, inflammation of conjunctiva; skin scaly; teeth carious; pulse 100, 20 per cent heart enlargement; roentgenograms show only 3 carpals in wrist, 3 missing entirely, one only a dot. Family, poor, ignorant; father, World War veteran; mother pellagrous; soil deficient; diet deficient in all protective foods. Home, one room, squalid, dirty.

Case 3.

Female, age 6; weight 30 lbs.; height 41 inches; hemoglobin 7.83 grams; gums, hemorrhagic, beginning scurvy; teeth loose; eyes, conjunctiva dry and injected; skin, scaly and discolored; teeth carious; pulse 116. Heart, murmur at apex; adenoids; roentgenograms show only 3 carpals in wrist; two missing entirely, and of the remaining ones only ossific centers appear as dots. Family lives on deficient land, poor, ignorant, diet deficient in protective foods.

. . . . .

These three children live in a section where "salt sick" of cattle is endemic and 70 per cent of the children are anemic. More than 12 per cent of the children have heart defects. This condition is functional. The symptoms are a soft systolic murmur often associated with tachycardia, irregular rhythm, and in a few cases enlargement. This condition is always found in the severely anemic child.

Ouida Davis Abbott is head of home economics research at the Florida State Agricultural Experiment Station. Her studies of mineral deficiencies in the diets of Florida school children have received much attention.

OTHER FLORIDA CHILDREN

By VERA WALKER

THE two cases here reported might, except for some local differences in the foods, have been found anywhere in the United States.

Case 1. Protein and other deficiencies

This child lives in a rural community of northwestern Florida a few miles south of the Alabama border. The community is in an area of moderately good farming land, and the average citizen, in good years, has a fair income from cotton, pecans, and tobacco.

The child, who was observed in a school lunch room, was twelve years old, but was about the size of an eight-year-old. She had a greenish-tinged waxy pallor, was very slow in her movements, and was two years retarded in school. The regular plate lunch provided to all the other children on the day of observation consisted of black-eyed peas, boiled cabbage, crisp, fried fat pork, grapefruit juice, biscuits, and rice pudding. This child, however, was given a "special" plate containing only rice pudding, fat pork, and a biscuit. She had brought a half-pint mayonnaise jar full of milk from home.

The child's mother had instructed the lunch-room workers to give her nothing but rice, grits, biscuits, and bacon, since these were the only foods she would eat. The principal of the school, in attempting to improve the child's dietary habits, had induced her to bring milk.

Apparently the child had never learned to eat a diversified diet. The mother had not trained her in proper food habits, and had commented on her idiosyncrasies in her presence, with the result that her diet was very much restricted.

While this is an extreme case of dietary unbalance, the diet typical of the community as a whole is top-heavy with refined cereal foods and fats. While considerable home-killed pork is eaten during the winter months and black-eyed peas are a staple food in the summer, the common diet of the community is low in protein foods. It is also low in vegetables and milk, and lacking in foods which are good sources of ascorbic acid, except for a few months in the summer when cantaloupes are plentiful.

Case 2. An urban child in northeastern Florida

Dottie, aged three years, is the only child of a skilled mechanic who works at the Naval Air Station and lives in a new subdivision of moderate-cost houses in Jacksonville. She is an attractive child, well dressed, and does not appear to be underweight, but is small for her age. Upon casual observation, one might not class her as "malnourished" except for her teeth; all of her upper incisors have decayed, leaving only jagged, blackened stumps. She has occasional head colds, and is quite susceptible to sore throat. Closer observation reveals that her tissue tone is poor. The margins of her eyelids are reddened with an occasional exudate evident, and she squints in ordinary sunlight. Her hair is fine and dry. The skin of her upper arms is somewhat scaly.

The child has poor food habits. She likes white bread sandwiches, carbonated beverages, candy, and desserts. She does not like vegetables or meat, and will take milk only on Rice Krispies or in the form of ice cream. She is permitted to choose her own food, with the result that her diet is made up almost entirely of refined carbohydrates, with only about a cupful of milk daily, and an egg occasionally. There is no regularity in her meals. She eats at odd hours, even getting up in the night for a bowl of her favorite cereal.

The family income is ample to provide the family with a good diet, but the mother is ignorant of food values and of the child's needs.

Mrs. Vera Walker is nutrition consultant for the Bureau of Maternal and Child Health of the Florida State Board of Health. Previously she was state supervisor of school lunch programs.

FIVE CHICAGO CASES

By Mame Dentler and Ruth Huenemann

Case 1. Swedish-American—a bad stomach

Age 40 years, weight 98½ pounds, height 62 inches, wife of a taxicab driver. She has one child of school age. Of the family income of $120 a month,

$60 is spent for food. Home conditions are comfortable, but meager. The patient does all the cooking on a gas range, and has an icebox for care of food.

When the patient came to the clinic she complained of continued loss of weight over a period of time, digestive disturbance, and chronic constipation. Physical examination and roentgenograms of the gastrointestinal tract revealed no findings of clinical significance.

The diet history showed the infrequent use of milk. The patient used butter regularly and cheese frequently. She averaged one cooked vegetable other than potato, and only one serving of fruit, canned, each day. The diet included no legumes. Other protein foods were used in adequate amounts. She ate oatmeal three or four times a week, and four or five slices of whole wheat bread or Swedish hardtack daily. She usually drank three to four cups of coffee or tea a day and two cups of water. Between meals she often drank a cup of cocoa made with part water and part milk, and some hardtack.

This diet is apparently low in the minerals calcium and iron, and in ascorbic acid and liquids. Also it is probably borderline in vitamin A and factors of the B complex.

A better diet was possible for the money available for food, although careful planning needed to be exercised. The lack of information on the role of right foods for the maintenance of health and for the establishment of good habits of elimination was a contributing factor. Fear that food she ate might cause a digestive disturbance had further influenced the patient's eating pattern and finally resulted in disinterest in food.

The patient was instructed in a high caloric, well-balanced diet, stressing laxative fruits, vegetables, and more fluids. She intelligently followed suggestions for improvement in her diet. Over a period of five months she has gained ten pounds in weight, the constipated condition has disappeared, and foods no longer disagree with her.

Case 2. Polish-American—a bakery child

A seventeen-year-old girl of Polish descent, admitted as a clinic patient because of chronic tonsillitis, rampant dental caries, hypoplastic dental enamel, and hemorrhaging of the gums. She was almost twenty pounds below average weight for her height. Her hemoglobin level was slightly below normal, and blood plasma vitamin C concentration at a definitely low level.

Since these clinical findings indicated dietary deficiencies, the patient was interviewed regarding her food habits and asked to keep accurate diet records. Her food intake was found to consist of refined bread and cereals; many bakery products, such as sweet rolls, cakes, cookies, and doughnuts; small portions of meat or an occasional egg; usually four cups of coffee daily with sugar and a small amount of evaporated milk; generally one small portion of vegetable daily; candy and ice cream frequently; fruit rarely. Thus the diet was very low in protective foods and in mineral and vitamin content. Because of the relatively small quantities of food eaten, even the caloric intake was low.

The patient's father, who had died five years previously, had been a baker, and the family of nine had lived largely on bakery products as long as the patient could remember. The easiest method of meal preparation for the busy Polish mother was simply to use the products made in the bakery. Milk and fruits seemed high in cost compared to coffee and cakes, and were considered luxuries. After the father's death the family had continued the dietary habits previously formed.

When the patient was hospitalized and given an adequate diet consisting of milk and milk products, citrus and other fruits, whole grain cereal products, eggs and meat, and, in addition, dietary supplementation of vitamin C tablets and dried brewer's yeast, she gained weight, and the gingival hemorrhages disappeared. Following tonsillectomy, the patient was discharged in apparent good health.

Case 3. Italian-American—poverty's child

A ten-year-old girl of Italian parentage, suffering from rheumatic heart disease and dental caries. Conversation with the mother disclosed the fact that the family was having serious financial difficulties due to the father's illness and consequent unemployment for the preceding five months. A sick benefit payment of fifteen dollars a week was the only income available for the entire support of this family of seven children.

A record of the patient's food intake showed that her daily diet consisted of several large servings of spaghetti with oil, homemade white bread, usually eaten dry but occasionally with oleo, one serving of either cabbage or dried beans, a potato, and coffee with a small amount of evaporated milk. Several times a week she ate a serving of meat and occasionally an apple or a pear. Thus the diet consisted largely of refined carbohydrates, and was low in protein, minerals, and vitamins. Even calories were scarcely adequate for weight maintenance, despite the fact that high caloric foods comprised the greater part of the diet. The diet problem in this family was therefore one of food quantity as well as quality. The mother was encouraged to bake whole wheat or enriched bread instead of white, and extra funds had to be provided for the purchase of milk, vegetables, fruits, fortified oleo, and eggs and other protein foods.

Case 4. American—cakes and candy

A girl eight years old, suffering from severe dental caries, frequent colds, and occasional abdominal pain of undetermined origin. Except for dental caries, physical and laboratory findings were negative, but the general appearance of the child suggested the possibility of dietary deficiencies. Therefore the mother was interviewed at length regarding the family's eating habits and asked to keep an accurate record of the child's food intake for a period of several weeks. The diet was found to include large amounts of white bread, spaghetti, and other refined cereal products, a serving of meat daily, a very small serving of vegetable, a scant pint of milk, fruit once or twice weekly, cookies or cake and candy daily, and tea or coffee sweetened with sugar.

Since vegetables, fruits, and whole grain products were used sparingly or not at all, the diet was markedly deficient in vitamins A, B, and C. Calcium content of the diet was less than desirable because of the use of only a pint of milk. No cod-liver oil or other source of vitamin D was being used.

The chief causes of this family's faulty eating habits appeared to be ignorance and indifference. The parents had not realized the superior value of whole grain or enriched cereal products over refined, or the benefits to be derived from a liberal use of fruits rather than cakes and candy as desserts and after-school snacks. Since the child liked coffee, she was permitted to drink it instead of milk. While the family income was marginal, the amount expended for food would have sufficed for an adequate diet had thought and care been used in food purchasing.

Case 5. The bachelor

A bachelor, age 42 years, height 66⅓ inches, weight 129 pounds, born in Kentucky. He had been a railroad worker, but was unemployed at the time because of his health, and had received assistance from a relief agency for one year.

The patient lived in one room with which some cooking privileges were allowed in the landlord's kitchen, but he often found the kitchen locked, and resorted to the use of practically all cold foods. When he came to the clinic he complained of a persistent cough and indigestion. Physical findings and roentgenograms revealed poor teeth, swollen and bleeding gums, a blood plasma ascorbic acid content of 0.04 mg. per cent, and a past history of pneumonia. The diagnosis was chronic bronchitis, malnutrition, and multiple avitaminosis.

The diet showed the use of less than one pint of milk a day; other dairy products seldom; vegetables and fruit about once weekly; eight to ten slices of white bread; meat, legumes, cheese, or eggs three or four times a week. Bread and jelly, cold cuts of meat, potato, and a bottle of milk made up the usual diet.

An evaluation of the diet reveals deficiencies in minerals and all vitamins, and shows it to be borderline in proteins. Moreover, practically all foods were such that they could be eaten without cooking.

The patient was encouraged by his social case worker to move to a place where he could do as much cooking as he wished. Because of his inexperience and helplessness in attacking the problem of cooking, he was given simple recipes and weekly menus to follow. Budget help was included with the instructions on food by the clinic nutritionist.

After following this patient for nearly a year, we find that his eating habits have changed; he cooks all his own meals, which are usually well balanced. He has gained some weight. Recent physical examination showed firm, healthy gums. His teeth have been put in condition. His blood ascorbic acid is 0.34 mg. per cent. He has asked his physician to approve his doing some light work.

Mame Dentler, M.S., is clinical nutritionist of Northwestern University Medical School, and nutrition counsellor with the Chicago Y. W. C. A. Ruth Huenemann, M.S., is nutritionist for the Walter G. Zoller Memorial Dental Clinic of the University of Chicago. Her work consists of teaching nutrition to clinic patients and dental internes. Both are authors of articles in scientific journals.

FROM A COUNTY HOME DEMONSTRATION AGENT'S NOTEBOOK

By MARGUERITE L. PETTEE

THE following cases were found in Hampshire County, Massachusetts.

Case 1. Unemployed during last depression

Family of two adults and six children moved into a house in a remote rural district. At one time the mother had only $2.00 a week to spend for food. They bought uncooked cereals, nubby potatoes which they could get for 50 cents a bushel, and dried beans. They had some macaroni and spaghetti, since they were "cheap and filling." They used lard when they had any fat at all. Occasionally they were able to get a few apples, onions, and beets. They had almost no meat or fish, and what they had was always made into stew or soup. The mother seemed intelligent, and the children were bright, though all were stunted in growth. The baby of the family, which I took to be about six months old, was actually fifteen months.

Much sickness was inevitable in their poorly heated home, with lowered resistance due to too little food.

Their condition is better now, since they have moved to a place where they have a garden, and the mother does some canning. They are getting more milk, since the father is working at a dairy and gets a low price on quantity buying of milk. The children will probably make a better growth since they are getting more food now, but they will probably always bear the signs of having had too little to eat during their preschool years.

Case 2. Not growing up

A type of case not uncommon, a boy of five who is still hand-fed about all the food he eats. He gets probably no more than a pint of milk a day. The things he eats are in general good, but he gets too little of them. He is allowed to be choosy about what he eats, and the family talks about what he likes and what he does not like, usually while he is hearing and taking it all in. He is growing tall, and is really too thin. He has numerous colds and stomach upsets.

The child's mother swears that he never eats between meals, but only recently he was seen with a lollipop at 11:30 in the morning. He has often been given a large molasses cookie about half an hour before supper "to keep him quiet." Right after this the mother complained that his appetite was not good. He is often allowed to have candy after a meal, and often is not made to finish his meal first.

The patient probably gets too many carbohydrates and too little protein. He does get a few leafy greens, but not enough to supply his needs. His color is rather pale, though he is outdoors quite a bit. He gets some cod-liver oil in capsule form, for he will not take the regular kind. He has some signs which indicate slight rickets.

The family has plenty of money to give the child everything he needs for food, and he lives in good surroundings. His trouble is poor food habits, fostered by the way he is handled at home. He is very dependent and babyish in his behavior, and much of this shows in his food habits. He often refuses to eat, and others feed him. Sometimes his food is strained, and all-in-all he revels in the attention he gets about his food. When he was to be given a fruit cup, the mother went over it picking out some kinds of fruit "he probably won't like." On occasions when his parents were absent at meal time, he ate as any child his age should, and ate a good meal. Perhaps when he starts to school he may outgrow some of his infantile ways, and this may be reflected in his improved nutrition.

Case 3. The problem child grown up

A teacher, a man about 35 years of age, who had the reputation of being "fussy and finicky" about his food. He has always had reddened eyelids, and his eyes looked rather weak. In other respects his health has been at least average. He was the youngest member of the family, and catered to by his mother, especially in the matter of food. He lived mostly on white bread, jam, butter, meat with no fat at all, and potatoes. He scorned other vegetables, but loved sweet desserts and candy. He recently married, and his wife had a hard time feeding him, since she knew he ought to have different food.

About a year ago the patient's eyes became so inflamed that he had to give up his position temporarily. He went to oculists and specialists and finally was sent to a specialist in a large city. The doctor looked at him for a time, and then said, "Tell me what you eat."

When he had heard, he said, "You are suffering from a vitamin deficiency. You are going on a diet, and you're going to like it. I am prescribing vitamin concentrates and a good diet. You are to eat green vegetables, a pint of milk daily at least, eggs, and don't you touch any except whole grain breads and cereals."

The patient of course found it hard to take such a radically different diet, but persisted and came to like it. He is back on his job, and his health is much improved. This is clearly a case of poor food habits started in childhood, through a mother's misguided sense of kindness. The income was more than adequate for the right kind of food.

Case 4. Adequate diets provided by simple home-grown foods

A family of two adults and two children, one preschool and one in early grade school. They live in a city of about 20,000 population, and own their home, which is in the city proper. They have a small plot of land, about 30 by 60 feet. By careful planning and succession planting, they are able to provide for all their vegetable needs with the possible exception of lettuce or other fresh greens which they buy in the winter time. They can about 400 or 450 jars of food each year and store cabbage and some root crops in their cellar. They have to buy eggs, meat, milk, and staples. The ground in the garden area is never idle, and when the early string beans are gone another crop is planted to take its place. They have a cherry tree and an apple tree on the place and can apple sauce and cherries. This family use few oranges, getting their vitamin C from canned and fresh tomatoes and cabbage, as well as raw fruits. The food bills are very reasonable, and the family are abundantly fed on a modest income. The father drives a truck and does not earn large wages, but they have been able to purchase their own home through thrifty management of food and clothing expenses. The homemaker makes most of the clothing for herself and the children. She makes her own soap from fat which she saves. They spend little on ready-made recreation, but enjoy a fine family life.

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BOSTON'S PROBLEM CHILDREN

By RUTH L. WHITE

IN A clinic such as the Nutrition Department of the Forsyth Dental Infirmary in Boston, we find chronic malnutrition of a general nature rather than specific disease due to the deficiency of a single nutrient.

Case 1. Teen-aged, sandwich and pickle type

An American girl fourteen years old, referred to the Nutrition Department by an orthodontist because of a rapid and widespread disintegration of the teeth. Only six of the twenty-eight teeth present in her mouth were free from caries. As frequently occurs in cases of this type, the routine medical examination showed no physical defects except those indicative of nutritional inadequacies.

A series of conferences, first with Mildred alone and later with Mrs. D., disclosed the following symptoms which are frequently associated with early nutritive failure: chronic fatigue (especially noticeable when climbing stairs); inability to concentrate in school; restless sleep; lack of appetite; persistent worry; irritability; gradual loss of weight over a period of six months.

The father had died suddenly, and the three members of the household had lost interest in planning, preparation, and consumption of meals. Mildred's habitually poor appetite was disregarded. Becoming "tired of" one essential food after another, she had gradually eliminated the majority from her diet. Analysis of a week's record of her intake indicated an extreme deficiency of milk, eggs, fruits, vegetables, and whole grain or enriched cereals. A typical day's eating consisted of bacon, toast, and coffee for breakfast; a crabmeat salad sandwich, potato chips, and a dill pickle for lunch; and a small salad, bread and butter, and a brownie for supper. Mildred and her friends ate their noon meal hurriedly while standing on the fire escape of the school during the brief period allotted for lunch.

With the exception of attendance at dancing school twice a week, Mildred was not allowed to go out in the evening. On this and other points related to her social life, open conflict existed between mother and daughter. Lack of interest in outdoor activities was conspicuous. Afternoons and Saturdays were spent at the homes of two girl friends considerably older than herself.

This history has been selected because Mildred seems representative of many teen-age girls whose emotional strains, unsuitable dietary regimens, and lack of outdoor recreation result in physical inadequacy.

Case 2. The sickly child

An Irish-American child, seven years of age, designated by the clinic pediatrician as in inferior physical condition characterized by the following: lack of subcutaneous fat; unsatisfactory muscle turgors; poor thoracic development; slow progress in weight over a period of three years; fatigued facial expression; and lethargic behavior. The dentist found serious dental abnormalities, including malocclusion and extensive caries of a progressive character.

The history reveals several interrelated factors which appear to contribute to Annette's unsatisfactory nutrition. She is the youngest of ten children. The mother was in poor condition when Annette was born, and still is. At nine months of age, Annette became dangerously ill with pneumonia and its complications, and was hospitalized for three months. Many of the undesirable habits of her childhood seem to have stemmed from the oversolicitous attitude which developed in the family as a result of this long illness.

Annette has a poor, erratic appetite, often leaving an entire meal untouched. Breakfast is rarely eaten. Like her parents and siblings, she has many prejudices with respect to food, preferring large amounts of sweets, bread, and highly seasoned meats to fruits, vegetables, and milk. Fish-liver oil has always been regurgitated.

Failure to establish a healthful daily routine is an additional factor in the general malnutrition of this child. Hours of sleep—which are determined largely by Annette's whims—are irregular and inadequate. Outdoor activity is insufficient, restricted partially by the child's lack of interest in play and partially by the family's intention to protect her from exposure and fatigue and from companions whom they consider undesirable. School attendance has been seriously interrupted because of her habits and frequent minor illnesses.

Case 3. Victor

Victor is nine years of age, a child of Italian-born parents. A dentist referred him to the Nutrition Department because of findings suggestive of vitamin deficiencies, namely: lesions on the tongue, the lips, and the angles of the mouth, and inflamed and swollen gum tissues. A diagnosis of acute Vincent's infection (trench mouth) had been made. The teeth were extensively decayed.

Subsequent examination by the pediatrician indicated nutritional disease of a multiple nature. The child appeared apathetic, markedly malnourished, and ill. The oral lesions were considered indicative of a deficiency of niacin, riboflavin, and ascorbic acid, with Vincent's infection superimposed.

The family was found to occupy four rooms in an Italian quarter of the city where standards of living were low. The father's weekly earnings were $25, of which he retained a considerable amount for his personal use.

There were many evidences of disorganization in the home. Bickering and bullying were the methods of child guidance most frequently employed. Meals were eaten irregularly in haphazard fashion, the parents rarely sitting down with the children, but merely "hollering at them to eat." Victor was considered a special problem with respect to appetite and food capriciousness. As the oldest child, he enjoyed considerable liberty, often failing to appear for meals.

As accurate appraisal as possible was made of Victor's dietary. The customary intake of calories and of each of the essential nutrients was found to be inadequate. It may reasonably be assumed that this multiple deficiency had been of long standing, although recently accentuated because of discomfort in eating.

Treatment consisted of prescription of a diet adapted to Victor's individual needs, and administration of ascorbic acid tablets and dried brewer's yeast, which supplemented the diet not only with niacin, riboflavin, and thiamine, but also with minerals and protein. Within a week the lesions had disappeared and improvement in general bodily vigor was apparent.

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How Good Is Our National Diet?

By ESTHER F. PHIPARD

FOOD supplies in the United States have seemed to be almost unlimited. Our enormous production capacity, together with modern methods of processing, storage, and transportation has made possible throughout the year a variety of foods unattainable in almost any other country. To the casual observer, productive farms, well-stocked warehouses, and flourishing markets may indicate a well-fed nation. Indeed, average per capita consumption figures would seem to bear this out. It is only by a study of individual family food consumption that we can learn about deviations from the average and how significant these deviations are in terms of human nutrition.

Such a study was conducted in 1936 by the Bureau of Home Economics and the Bureau of Labor Statistics in collaboration with other Federal agencies. Weekly records of family food consumption were the basis for estimates of the nutritional adequacy of diets.

Any dietary evaluation assumes that we know what nutrients and how much of each are needed, and that we know how much is supplied by each food. A basis for judging the adequacy of diets was made available in 1941 when the Committee on Food and Nutrition of the National Research Council announced a set of recommended dietary allowances for specific nutrients. Prior to that time there had been no generally accepted standards. Each worker needing such figures was obliged to devise his own or to adopt those of some other worker.

The chemical composition of common foods in terms of protein, carbohydrate, fat, and mineral elements is pretty well established, but much remains to be learned about the vitamin content of foods as eaten—particularly vitamins newly or yet to be discovered. Information of this kind is accumulating rapidly, however, and each succeeding estimate of the nutritional quality of a diet is probably nearer the truth than the last.

Results of the 1936 study indicate that fewer than a fifth of the families in this country had diets that met the National Research Council's recommendations for each of the seven nutrients considered (protein, calcium, iron, vitamin A, thiamine, riboflavin, and ascorbic acid). Farm families fared better than city families on the average, because the foods they produce at home —milk, eggs, meat, vegetables, and fruit —are good sources of the nutrients often found to be low in family diets.

DIET AND INCOME

Poor diets are frequently the result of low incomes. Obviously there is a level of food expenditure below which it is impossible to buy an adequate diet. Unfortunately, too, many of the families with lowest incomes have little or no knowledge about food and nutrition and are ill-equipped to invest their food money to good advantage. With rising income, diets tend to improve in nutritional quality, because families can afford to buy more vegetables and fruit, and more milk, eggs, and meat. This means that the diets of the higher income groups contain larger quantities of protein, minerals, and vitamins than those of the lower income groups. However, many families spend enough but fail to obtain an adequate diet. Usually lack of knowledge is responsible for this failure. A fair understanding of the place of various foods in the diet is almost essential if every food dollar is to count toward good nutrition. It is only when food expenditures reach a fairly high level that good diets are likely to result even without much thought or planning.

Information about food expenditures in 1941 and in the first quarter of 1942 was obtained in a recent study of Family Spending and Saving in Wartime conducted co-operatively by the Bureau of Home Economics and the Bureau of Labor Statistics. As in the 1936 study, the Bureau of Home Economics collected data from farm and rural nonfarm families, and the Bureau of Labor Statistics from city families. Early reports of the new study show that the average food expenditure of families and single consumers in 1941 was $500; by the first quarter of 1942 spending for food had advanced to a yearly rate of $520. The latter figure represents an increase of 39 per cent since 1935–36, when food expenditures averaged $374. During the same period incomes rose also. In 1935–36 the median income (money and nonmoney) of families and single consumers was $1,070. In 1941 the median money income alone was $1,481, and by the first quarter of 1942 it had reached a yearly rate of $1,544.

This greater purchasing power in 1942 has not been all clear profit, however, because of changes in the cost of living. Retail food prices were 20 per cent higher in the second quarter of 1942 than in 1936.

CHANGES IN FOOD CONSUMPTION

In view of these changes it is of interest to see how food consumption has changed between the two periods. Table 1 shows the quantities of food groups consumed by farm and nonfarm families in 1936 as compared to estimates for 1942 based on the spring season alone. Although data for nonfarm families for 1942 represent rural nonfarm families only (city data are not available at the

TABLE 1—FAMILY FOOD CONSUMPTION, 1936 AND SPRING 1942, PER CAPITA PER YEAR

Year and degree of urbanization	Milk equivalent	Potatoes, sweetpotatoes	Dry beans, peas, nuts	Tomatoes, citrus fruit	Leafy, green, yellow vegetables	Other vegetables and fruit	Eggs	Meat, poultry, fish	Flour, cereals (baked goods equivalent)	Fats (including butter, bacon and salt side)	Sugars, sirups, preserves
	Quarts	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Dozen*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
All families, 1936[a]	177	127	11	87	69	203	23	123	196	62	68
Nonfarm families, 1936[a]	161	116	10	101	73	220	23	130	177	60	68
Rural nonfarm families, 1942 (spring)[b]	207	136	21	105	95	139	24	90	179	56	59
Farm families, 1936[a]	226	159	16	43	57	152	23	102	255	70	82
Farm families, 1942 (spring)[b]	294	161	22	84	95	145	36	95	222	68	73

[a] Data from Consumer Purchases Study, Bureau of Home Economics, U. S. Department of Agriculture.

[b] Data from Study of Family Spending and Saving in Wartime, Bureau of Home Economics, U. S. Department of Agriculture. Converted to a yearly rate from figures obtained for a week in April, May, or June 1942.

time of writing), differences in food consumption between rural nonfarm and urban families are not great. In spite of the fact that averages for the two periods are not strictly comparable, certain changes in food consumption are apparent.

Both farm and rural nonfarm families were using more milk in the second quarter of 1942 than in 1936. On farms part of this increase may have been seasonal, since most farm families produce their own milk, and spring and summer are seasons of abundant milk production. It is unlikely, however, that the increase in consumption by village families can be attributed wholly to the seasonal factor.

A striking increase was found in consumption of leafy, green, and yellow vegetables in the spring of 1942. In the case of village families this shift was at the expense of other vegetables and fruit, but farm families decreased their consumption of these foods but little.

Farm diets in the spring of 1942 contained almost twice the quantity of tomatoes and citrus fruit that were had in 1936 as a whole. Of the total quantity, fresh oranges and grapefruit accounted for about two-thirds and tomatoes one-third. This higher consumption of tomatoes and citrus fruit is very significant, since these foods are outstanding sources of ascorbic acid, one of the nutrients frequently found to be low in the diets of farm families in 1936. It is a little surprising also to find consumption of these foods at such a high level in the spring months (equivalent on a yearly basis to 84 pounds per capita), when the supply of home-canned tomatoes might easily be exhausted and the new crop of fresh tomatoes not in season in most parts of the country, and when market supplies of citrus fruit had passed their seasonal peak of abundance and low prices. It would appear that knowledge of the importance of these foods in the diet has reached the farm family. In addition, there has been more money with which to buy them.

Other apparent changes in the Nation's food habits include a higher consumption of dry beans, peas, and nuts in April, May, and June 1942 than in 1936. The higher egg consumption probably reflects the fact that the 1942 study was made in the months when eggs were still fairly plentiful. Meat consumption (including poultry and fish but not including bacon and salt pork) was slightly lower in these three months of 1942 than in 1936. On farms this may be in part a seasonal factor. For nonfarm families the difference probably would be somewhat less if data for city families could have been included. The slightly lower consumption of sugar in the spring of 1942 reflects the facts that rationing got under way in May, and that the fruit-canning season had hardly begun.

Such shifts in food consumption as have taken place between 1936 and early 1942 are in the direction of improving the Nation's diets. In order to correct some of the dietary deficiencies revealed by the extensive study of 1936, people have been urged to increase their consumption of milk, of fruits and succulent vegetables, and of whole-grain cereals. For many families this was a matter of education in food selection; for others it was a matter of having money enough to buy these foods. For several months the country has been exposed to a widespread nutrition campaign. During the same period the general level of incomes has risen. Food prices have advanced also, some much more rapidly than others. Hence, families may have made many changes in their usual spending patterns. In some instances good prices may have induced farmers to sell certain foods that they otherwise might have retained for home consumption. The net result of all these factors may best be judged in terms of the nutritive value of the food consumed.[*]

Nutritive Value of Diets

Table 2 contains estimates of the average nutritive value of the diets of all families, of nonfarm and of farm families as shown by the Consumer Purchases Study in 1936, and of rural nonfarm (village) and farm families in the spring of 1942 as shown by the study of Family Spending and Saving in Wartime. Averages are given in terms of quantities per capita per day of each of several nutrients furnished by food. Included in the table are also per capita daily allowances derived from the National Research Council's recommendations for persons of different age, sex, and activity.

These estimates of nutritive value are based on uncooked foods and do not take into account household waste or the losses in certain nutrients during food preparation and serving. Losses for some nutrients and food groups may amount to 50 per cent or more of the total in raw food. Hence, the averages in Table 2 are somewhat optimistic, particularly with respect to ascorbic acid and thiamine. Since the recommended allowances are the quantities that should be ingested, averages based on uncooked foods need to be well above the suggested allowances if the diets are to provide the quantities needed by the body.

Compared to the recommended allowances, the average diet in 1936 appears to have been low in riboflavin and niacin, borderline with respect to calcium and thiamine, and adequate in each of the other nutrients. City and village (nonfarm) diets were lower than the allowances with respect to calcium, riboflavin, and niacin. Farm diets, too, failed to supply the suggested allowances of riboflavin and niacin, and, in addition, of ascorbic acid.

In spring 1942, village diets averaged higher in calcium and riboflavin than the nonfarm diets of 1936 because of higher milk consumption; they were still too low in riboflavin and niacin, and also

TABLE 2—Average Quantities of Specified Nutrients in Family Diets, 1936 and Spring 1942, Per Capita Per Day[a]

Year and degree of urbanization	Food energy	Protein	Calcium	Iron	Vitamin A value	Ascorbic acid	Thiamine	Riboflavin	Niacin
	Calories	*Grams*	*Grams*	*Milligrams*	*International Units*	*Milligrams*	*Milligrams*	*Milligrams*	*Milligrams*
All families 1936[b]	2,900	83	0.87	14.2	7,100	89	1.60	1.85	15.0
Nonfarm families 1936[b]	2,770	81	.81	14.0	7,300	96	1.60	1.79	15.2
Rural nonfarm families 1942 (spring)[c]	2,730	80	.93	14.1	6,660	99	1.54	1.84	13.3
Farm families 1936[b]	3,340	92	1.10	15.7	7,400	64	1.65	2.03	14.1
Farm families 1942 (spring)[c]	3,258	97	1.24	16.4	7,890	104	1.94	2.39	14.5
National Research Council recommendations[d]	2,800	66	.90	12.0	4,700	70	1.60	2.30	16.0

[a] Nutritive values of family diets based on figures for uncooked food.

[b] Data from Consumer Purchases Study, Bureau of Home Economics, U. S. Department of Agriculture.

[c] Data from Study of Family Spending and Saving in Wartime, Bureau of Home Economics, U. S. Department of Agriculture.

[d] Per capita figures based on 1942 population weights.

slightly low in thiamine. The outstanding changes in farm diets were increases in calcium, ascorbic acid, thiamine, and riboflavin. These increases are probably attributable to the greater consumption of milk, tomatoes and citrus fruit, and dried beans and peas.

Farm families had more satisfactory diets than their village neighbors in spring 1942, judging from the average quantities of the several nutrients given in Table 2. Food produced on the farm for home use accounted for at least half of the average quantity of each nutrient. For protein, ascorbic acid, and thiamine the proportion was close to 60 per cent, while for calcium, vitamin A, and riboflavin it was more than three-fourths of the total.

Because such a large share of their total food supply can be obtained from the farm, rural families have a better opportunity than city families to maintain or even improve upon their usual levels of food consumption in the face of rising food costs, food shortages, and probable reduction in the variety of foods offered for sale. Furthermore, their diets benefit in proportion to the amount and variety of foods produced at home. These facts should encourage farm families to continue their home production even though it becomes increasingly difficult because of shortages of labor and materials.

In interpreting estimates of the nutritive value of diets, it should be remembered that while averages may seem to meet the recommendations of nutritionists, actually a large proportion of families have diets seriously deficient in one or more nutrients. The proportion of diets in 1936 that were below National Research Council recommendations for certain important nutrients was as follows: calcium 50 per cent, vitamin A 30 per cent, ascorbic acid 65 per cent, thiamine 60 per cent, riboflavin 60 per cent. Comparable figures for 1942 are not available at present. There is reason to believe, however, that many of the families that had poor diets in 1936 have benefited by higher incomes and have been able to enlarge and enrich their diets. At the same time other families with fixed incomes are finding it difficult to maintain their usual level of food consumption in the face of higher living costs. Nevertheless, the nutritive value estimates given in Table 2 point to general dietary improvement.

THE WAR AND NUTRITION

Under stress of war it becomes more important than ever to have a well-fed nation. It is urgent that we hold on to such dietary gains as have been made—that there be no slipping back due to difficulties of producing and distributing our food supply. It is reassuring to know that current plans for our agricultural production take into account the nutritional needs of our people. For example, when it becomes necessary to curtail civilian consumption of meat, every effort is made to provide a supply of other foods that can take the place of meat in the diet. Vegetable production is being streamlined to fit the diminishing supply of farm labor and machinery. Special emphasis is to be given to growing the kinds that give the highest nutritive returns for the labor involved. The relative food value of different kinds of vegetables and fruits will also determine to a large extent what kinds will be selected for canning.

Further evidence of Federal concern for the national diet is found in the food stamp and school lunch programs and in the program for the enrichment of foods, all of which have as their objective the improvement of the diets of low-income families.

The exigencies of war may call for some change in our usual food consumption habits. But some of these may be for the better in that the Nation may acquire a taste for a more nearly adequate diet than that to which it was accustomed in 1936. Certain it is that neither during the war nor in the years following should there be any relaxing of effort to provide the entire population with the kinds and quantities of foods best suited to nutritional needs.

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The Dietaries of Our Military Forces

By Paul E. Howe

AN ADEQUATE dietary is important for the soldier's health, morale, and effectiveness. The feeding of an army requires planning, purchase, delivery, and preparation of food on a large scale. The determination of the dietary is a function of command; its procurement is the responsibility of the Quartermaster Corps of the Services of Supply. The Medical Department, Services of Supply, advises with regard to nutrition and, in carrying out its responsibilities with regard to maintaining the health of the soldier, reviews messing operations and joins with officers of the line in supervising the cooking by the enlisted men.

Rationing Systems

Two systems of rationing are employed: (1) a money allowance with which the organization commander purchases food—called the garrison ration system; and (2) the issue of quantities of food prescribed at some level of command, usually the higher echelons—called the field ration, or issue in kind.[1] Various types of field rations are prescribed for particular uses. Field ration A usually contains a maximum of fresh foods and is used in the training camps and elsewhere when possible. Field ration B consists of foods that do not require refrigeration, such as canned fruits and vegetables, and canned or preserved meats, potatoes and onions, flour, and so forth. When this ration is supplied to expeditionary troops, it is expected that local supplies will be used where available. Special packaging of the B ration into cartons containing food for a given number of individuals for one day, such as the 5-in-1 or 10-in-1, is provided for convenience in use and handling.

In special ration Type C, a daily ration of three cans consisting of hash, meat and beans, and a meat stew, and three cans each containing primarily biscuits, a beverage, sugar, and a confection has been devised for use by individuals where preparation of food may be difficult.

A pocket ration, Type K, of concentrated foods for three meals, packed in cartons and consisting chiefly of a can of meat or cheese, biscuits, a confection, sugar, and a beverage, including lemon powder, is available for special occasions such as combat, special troops, or missions where relatively light weight is desirable.

A ration is defined in army regulations as the allowance of food for the subsistence of one person for one day. The garrison ration is prescribed by the President. It consists of definite quantities of food and condiment items. In effect, these quantities are used as the basis for the determination of the money available for the purchase of food. The cost of purchase of these items at any post or station determines the money value for a given month. The kinds and quantities of food in the present ration approximate a fair variety, but money value has been the major determinant in prescribing it. The various changes have progressively approached an adequate dietary. The two changes of 1927 and 1932 illustrate the need for this.

The ration of 1927 was planned to provide a money value of approximately 50 cents per man per day. The changes were predominately in an increase in amounts and kinds of animal products. In effect, variety and adequacy were attained in part from the money value of animal products, particularly meat, provided in the ration in quantities greater than required to satisfy the average soldier. The effect of using extra meat for this purpose was illustrated during the subsequent financial depression, when the value of animal products decreased out of proportion to vegetables and fruits to such an extent that a suitable dietary could not be purchased with the money available. The garrison ration of 1932, now in use, decreased the allowance of meat, introduced variety among classes of food, and was improved as to quantities of certain items.

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[1] U. S. Army Regulations 30-2210, March 15, 1940.

SYSTEM IN PRESENT USE

A modification of field ration A is generally used at present in the United States. It facilitates purchase and tends to prevent the possibility of an inadequate or monotonous dietary in the hands of inexperienced mess personnel. It is based on a set of monthly menus with corresponding quantities of foods for units of 100 men. The quantities of food supplied must provide a balanced (adequate) dietary. This menu and the quantities of food are prescribed by the commanding general of a service command (formerly corps area), or by such commanders of camps, posts, or stations as he may designate. The kinds and amounts of food used are not limited to those contained in the garrison ration. At first the money value of the quantities of food prescribed was to be 2 cents less than the value of the garrison ration, and the 2 cents was paid to the organization for the purchase of other foods as desired. Later, the two-cent saving was eliminated.

This modified system of ration-in-kind provides flexibility in the kinds and amounts of food provided in various parts of the country, and makes it possible to adapt it to the local fresh vegetable and fruit markets. The menus are required to be prepared two months in advance of the month of issue, which permits review as to nutritional adequacy and the purchase of food. It is most successful where a particular camp or station has the opportunity to express its opinion as to the variety and quantity of food to be supplied. The selection and quantities of food vary according to the various concepts of what constitutes a satisfactory dietary, and often reflect gross variations in food habits and local supplies. In reviewing mess operations, nutritional adequacy usually is determined on the basis of the recommended allowances prepared by the Food and Nutrition Board of the National Research Council.

The varied activities within a camp or station present problems of local adjustment if the wastage of food is to be reduced to a minimum. Some organizations require more food and some less. The quantities of food prescribed are usually on the basis of the average requirements. Hence, adjustments are required. Adjustment is made difficult by the human desire to obtain the full money value of the ration. This desire often leads to the accumulation of excess stocks of food in company kitchens and to some wastage of vegetables. Provision is made to exchange nonperishable foods for food not used, provided the foods are in the original packages and are suitable for reissue. Formal provision, however, is not made to supply additional food to more active troops where the quantities of food prescribed are planned on the basis of the average experience of a station.

Since the more interesting foods such as meats, vegetables, and fruits are needed in approximately the same quantities for both active and inactive troops, the adjustments should theoretically be confined chiefly to potatoes, legumes, and cereal products, including bread. Actually, where there is an increased activity there is usually a demand for more meat.

The success of adjustments rests at the station level, particularly where the officers in charge of issue are accommodating and adaptable. There is some question with regard to the need or desirability for the exchange of unused foods for other foods, since each day an adequate dietary is presumed to be issued. It is possible to impair the adequacy of the dietary in general in the process of exchange through the substitution of very acceptable but nutritionally different foods for those planned. It is obvious, therefore, that even though carefully planned, the field ration system requires constant attention of trained personnel for its success.

ATTENTION TO NUTRITIVE VALUES

In addition to planning an adequate dietary, care is required to conserve the nutritive value of the food supply in the preparation and service of food. Attention must be given to mode of preparation in order that the meals shall be pleasing, for purposes of morale and to insure their consumption, and also to prevent destruction of labile nutrients such as ascorbic acid, thiamine, vitamin A, and riboflavin, and the loss of water-soluble vitamins and inorganic salts. A review of the messing operations in World War I and this war indicates that attention to the conservation of nutrients is the major possibility for improvement in the adequacy of the soldier's dietary.[2]

The system of issuing rations on the basis of menus is being applied successfully in preparing rations for overseas use.

The ration in the Navy is set by Congress in terms of quantities of certain basic foods, with definite quantities of alternate foods. Different proportions of the basic foods and alternates are used. Under-issue of certain foods permits the over-issue of articles or the purchase of other foods, provided there is an under-issue of equivalent money value of some other article or food. There is, in effect, as with the Army, an opportunity to make considerable adjustment to the market and to the habits of the men.

The general interest in vitamins requires a statement of the policy of the Army with regard to them. In general, it is expected that the nutritive requirements of the soldier will be obtained from natural and processed foods. Review of messing operations has not often revealed a need for vitamin concentrates. There may be considerable losses in the vitamin content of food during processing such as dehydration and canning. Where rations that have their nutritive value impaired are provided, as in the case of field ration B, they are carefully reviewed and, if necessary, fortified by the addition of vitamins to some particular food or by the inclusion of vitamin tablets or capsules. For example, the destruction of ascorbic acid in canning and dehydration requires the inclusion of lemon powder in field ration B. For overseas troops a recent directive provides an automatic supply of vitamin tablets or capsules to be used on the advice of the surgeon. It is contemplated that there will ordinarily be no need for these concentrates; hence, provision is made for their use in medical treatment well before they will have deteriorated.

VARIATIONS AMONG ARMY UNITS

A review was made of Army messing under the menu plan of rationing in the nine corps areas (now service commands) from May to October 1941.[3] This study indicated considerable variations between corps areas as well as camps in individual foods and in classes of foods. In the latter case, foods were classified according to similarity of nutritive value, or because they were unique as to kind or use. (A table of weighted averages corresponding to the various classes based on Army use of each class was developed to simplify evaluation of the dietaries.) Similar data are practically complete for the period November 1941 to May 1942. While there are some changes, the differences so far are not great.

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[2] Paul E. Howe, "The Effect of Recent Developments in Nutrition on the Rationing of the Army," *Connecticut State Medical Journal*, Vol. VI, No. 3 (March 1942), pp. 157–61.

TABLE 1—VARIATIONS IN QUANTITIES OF INDIVIDUAL FOODS PRESCRIBED IN VARIOUS CAMPS IN A SERVICE COMMAND, MAY 1942

Values Expressed in Pounds Per Man Per Day

Individual Foods	Army Average	Proposed		Prescribed by the Service Command, Stations or Camps, May 1942								
	May to Oct. 1941 I	May 1942 Master Menu O. Q. M. G. II	Service Command Average III	Service Command	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
Beef[a]	.330	.376	.413	.387	.403	.303	.364	.493	.366	.390	.477	.536
Pork[b]	.070	.087	.111	.098	.118	.095	.187	.111	.077	.150	.105	.060
Lamb	.026	.011	.051	.077	.077	.052	.032	.013	.071	.042	.074	.019
Fish, fresh	.051	.057	.053	.048	.048	.056	.056	.056	.056	.045	.058	.055
Fowl	.079	.045	.082	.068	.068	.118	.137	.098	.063	.084	.047	.058
Bread	.465	.439	.384	.375	.375	.423	.384	.400	.368	.437	.366	.332
Flour	.154	.194	.152	.149	.148	.168	.121	.144	.151	.094	.147	.243
Evaporated milk	.374	.467	.460	.401	.399	.458	.471	.518	.428	.440	.433	.589
Peas, fresh and canned	.041	.035	.035	.030	.001	.052	.032	—	.064	.017	.038	.049
Cabbage	.096	.073	.071	.074	.075	.029	.064	.056	.074	.061	.053	.078
Carrots	.053	.065	.070	.055	.055	.065	.085	.066	.052	.086	.068	.095
Lettuce	.067	.116	.076	.043	.043	.102	.102	.048	.045	.084	.086	.135
Onions, dry	.080	.106	.072	.076	.077	.050	.046	.060	.077	.072	.089	.103
Tomatoes, fresh and canned	.145	.093	.111	.113	.113	.106	.094	.150	.096	.108	.096	.124
Lemons	.048	.015	.027	.033	.041	.010	.025	.005	.052	.011	.003	.062
Oranges	.097	.141	.096	.076	.135	.141	.075	.084	.090	.068	.110	.084
Pineapple	.025	.013	.028	.026	.007	.005	.055	.020	.028	.044	.045	.018
Apples	.073	.103	.082	.044	.084	.185	.070	.058	.087	.023	.101	.083

[a] Beef and veal calculated as carcass beef. [b] Fresh pork and cured ham.

Rather than repeat here the data already published, data are presented on the quantities of particular items of food prescribed for a number of camps or stations within a service command for May 1942 (Table 1). In this service command a monthly menu was prepared at the headquarters and distributed to each station. Use of the menu and quantities of food was strongly recommended but was not mandatory. Changes were made by its issuing officer or officer in charge of the marketing center (who purchases the fresh fruits and vegetables) to ad-

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[3] Paul E. Howe, "Nutritional Problems of the Army," *The Military Surgeon,* Vol. XC, No. 3 (March 1942), pp. 253–66.

TABLE 2—VARIATIONS IN THE QUANTITIES OF FOOD SELECTED BY DIFFERENT STATIONS WITHIN ONE SERVICE COMMAND

(In Pounds Per Man Per Day)

Food Groups	Army Average	Proposed		Prescribed by the Service Command, Stations or Camps, May 1942									
	May to Oct. 1941 I	May 1942 Master Menu O. Q M G. II	Service Command Average III	Service Command	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*
Meats	.845	.975	.963	.907	.914	.984	.978	1.082	.933	.970	.989	.908	.877
Eggs	.178	.142	.144	.150	.149	.127	.155	.152	.161	.117	.129	.160	.180
Milk and products	1.085	1.223	1.201	1.270	1.277	1.167	1.226	1.178	1.192	1.067	1.100	1.333	.952
Butter	.093	.090	.093	.092	.092	.104	.095	.090	.088	.091	.075	.106	.080
Fats, other	.085	.080	.077	.074	.076	.068	.066	.082	.082	.056	.077	.116	.100
Grains and grain products	.737	.777	.665	.653	.654	.697	.648	.692	.654	.699	.591	.695	.789
(Bread)	(.464)	(.439)											
Legumes	.066	.038	.044	.042	.045	.044	.033	.039	.033	.048	.049	.063	.048
Sugars and sirups	.345	.273	.288	.268	.268	.243	.253	.309	.296	.290	.317	.346	.264
Leafy green or yellow vegetables	.420	.443	.395	.343	.370	.363	.421	.352	.376	.418	.408	.505	.403
Tomatoes	.160	.093	.144	.137	.136	.174	.146	.195	.115	.117	.127	.149	.134
Citrus fruits	.210	.283	.212	.181	.246	.232	.223	.168	.208	.222	.201	.230	.161
Potatoes, white	.654	.747	.677	.695	.695	.725	.544	.743	.707	.711	.511	.763	.824
Vegetables, other	.301	.371	.316	.317	.337	.279	.289	.330	.306	.273	.324	.389	.377
Fruits	.410	.290	.330	.331	.281	.331	.392	.378	.326	.216	.328	.388	.390
Fruits, dried	.034	.042	.026	.019	.021	.024	.029	.022	.016	.041	.038	.026	.044

TABLE 3—APPROXIMATE NUTRITIVE VALUES OF FOODS SELECTED BY DIFFERENT STATIONS WITHIN ONE SERVICE COMMAND

		Army Food Prescribed May to October 1941	Proposed		Prescribed by the Service Command, Stations and Camps, May 1942								
			May 1942 Master Menu	Service Command Average	Service Command	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
Calories		4,331	4,328	4,197	4,090	4,103	4,174	4,069	4,428	4,144	4,097	4,035	4,633
Protein	Grams	131	156	133	129	132	134	132	141	130	131	129	136
Fat	Grams	195	176	201	196	198	202	198	213	197	187	193	222
Carbohydrates	Grams	513	525	459	447	448	448	434	479	454	466	441	516
Calcium	Mg.	1,012	1,151	1,040	1,070	1,080	1,020	1,050	1,030	1,030	970	970	1,160
Phosphorus	Mg.	2,033	2,369	2,050	2,030	2,050	2,060	2,030	2,150	2,010	2,000	1,960	2,190
Iron	Mg.	25	26	24	23	23	24	23	25	23	24	23	25
Vitamin A	I. U.	13,274	12,864	14,480	14,600	14,930	13,380	12,850	11,620	15,860	14,540	16,360	16,160
Thiamine	Mg.	2.99 (2.053)[a]	3.08	3.18 (2.27)[a]	2.99 (2.17)[a]	3.13 (2.22)[a]	3.71 (2.55)[a]	3.44 (2.39)[a]	3.28 (2.31)[a]	2.79 (2.06)[a]	3.34 (2.35)[a]	2.98 (2.13)[a]	2.99 (2.21)[a]
Riboflavin	Mg.	2.80	3.75	3.02	3.11	3.12	2.91	2.80	2.85	3.18	2.91	3.13	3.16
Nicotinic acid	Mg.	29.612	—	32.0	30.2	29.6	32.6	35.8	34.6	30.7	31.8	31.2	31.5
Ascorbic acid	Mg.	140 (97)[a]	112.0	137 (100)[a]	127 (92)[a]	138 (101)[a]	138 (105)[a]	136 (102)[a]	135 (96)[a]	137 (95)[a]	134 (97)[a]	129 (94)[a]	160 (118)[a]

[a] Corrected for moderate cooking losses.

just the cost of the ration to the value of the garrison ration, or for variations in supply.

As a guide in preparing menus The Quartermaster General's Office prepares and sends out a proposed monthly menu. Its use is not mandatory. Included in Table 1, therefore, are the quantities proposed by The Quartermaster General's Office and by the service command as well as the quantities actually prescribed for the stations. Table 2 gives the weights of the classes of food prescribed. There are considerable variations in the quantities of food issued, which reflect various concepts of an adequate satisfactory dietary and gross differences in food habits and local supplies.

Table 3 gives the nutrients provided by the food in Table 2. Since the quantities of food are reduced to a per-man-per-day basis, the absolute differences are not large. When these differences are multiplied by fifteen to sixty thousand for a camp they become significant, even for a day, while for a year or for the whole Army the quantities often become enormous. The quantities of food indicated in the various tables are for food as purchased.

The Surgeon General's Office from time to time conducts nutritional surveys to obtain information on the adequacy of messing operations. These surveys of food used and wasted cover periods of from seven to ten days. Table 4 contains the average of the various classes of food consumed in one hundred and seventeen mess studies from August 1941 to August 1942.

These studies were made in all parts of the country. For comparison, data are included on (1) the average quantities of food prescribed for the Army between May and October 1941, weighted according to military population of the various corps areas, (2) the

TABLE 4—COMPARISON OF FOOD PRESCRIBED AND FOOD CONSUMED IN THE U. S. ARMY AS DETERMINED BY 117 NUTRITIONAL SURVEYS

(Pounds Per Man Per Day)

Food Groups	Proposed		Aver. Issued U. S. Army, 117 Surveys	Aver. Consumed by U. S Army, 117 Surveys	Edible Waste of 7 Camps		Food Supplied in One Camp, U. S. Army, 1918 lbs/m/d
	Army Average May to Oct. 1941	May 1942 O. Q. M. G. Menu			Aver. Lbs Per Man Per Day	Percentage	
Meats	.845	.975	.940	.935	.067	12.2	.965
Eggs	.178	.142	.150	.145	.014	6.0	.097
Milk and products	1.085	1.223	1.030	.974	.040	2.5	.508
Butter	.093	.090	.088	.091	.004	1.3	.061
Fats, other	.085	.080	.073	.075	.011	6.6	.044
Grains and products	.737	.777	.651	.578	.072	9.3	.828
(Bread)	(.464)	(.439)	(.307)	(.312)	(.029)	(9.7)	—
Legumes	.066	.038	.052	.057	.013	8.7	.072
Sugar and sirups	.345	.273	.261	.263	.021	7.0	.301
Leafy green or yellow vegetables	.420	.443	.387	.314	.068	20.9	.467
Tomatoes	.160	.093	.137	.133	.007	5.2	.101
Citrus fruits	.210	.283	.205	.229	.026	6.3	.027
Potatoes	.654	.747	.769	.650	.087	16.5	1.142
Vegetables, other	.301	.371	.278	.212	.044	14.6	.177
Fruits	.410	.290	.348	.365	.013	8.9	.348
Fruits, dried	.034	.042	.063	.017			.087

TABLE 5—APPROXIMATE NUTRITIVE VALUES OF FOOD PRESCRIBED AND CONSUMED BY U. S. ARMY

As Determined by Nutritional Surveys, August 1941 to July 1942

		Nutritive Value of Food Issued Average of 117 Surveys	Nutritive Value of Food Consumed Average of 117 Surveys	Daily Allowances of Specific Nutrients Recommended by the Food and Nutrition Board, National Research Council for the Average Man Weighing 154 Pounds	
				Moderately Active	Very Active
Calories		4,101	3,888	3,000	4,500
Protein	Grams	130	124	70	70
Fat	Grams	193	193	—	—
Carbohydrate	Grams	460	415	—	—
Calcium	Mg.	954	883	800	800
Phosphorus	Mg.	1,946	1,882	—	—
Iron	Mg.	25	28	12	12
Vitamin A	I.U.	10,760	9,255	5,000	5,000
Thiamine	Mg.	2.2[a]	2.1[a]	1.8	2.3
Riboflavin	Mg.	3.0	2.3	2.7	3.3
Nicotinic acid	Mg.	32.0	27.4	18.0	23.0
Ascorbic acid	Mg.	93.2[a]	86.0[a]	75.0	75.0

[a] Corrected for moderate cooking losses.

food recommended by The Quartermaster General's Office, and (3) the food issued at the time of the surveys. Included in Table 4 are the recommended allowances of the Food and Nutrition Board, National Research Council, and also some limited data on waste of food. The latter are confined to studies of seven camps and are indicative of the losses that occur. Table 5 gives the nutritive values corresponding to the data in Table 4, exclusive of waste.

GENERAL QUALITY OF MENUS

An analysis of the nutritive value of the monthly menus and of the food consumed indicates that the former generally meet the daily allowance of nutrients prepared by the National Research Council. Occasions are found where the menus as prepared and submitted do not meet these allowances, although corrections are made in them before they are approved for issue. They are superior to many civilian dietaries.

Improper selection as to kind and quality, storage, preparation, and service of food modify the excellence of the planned menus. The significance of these factors in reducing the adequacy of the dietaries is realized. Education and constant supervision tend to reduce them to a minimum.

There is less information on the effectiveness of the garrison ration system. These messes do not have the benefit of the planning and checking possible with the menu plan of issuing rations-in-kind. In some commands the monthly menus are required to be followed even where the troops are on the garrison ration. The operations of these messes are reviewed by medical officers. A proposal has been made (on which no action has been taken) which would require a nutritional accounting of the food used, and which would also permit an easy review by the commanding or medical officers. This accounting would be in terms of classes of food. It would provide the assurance of the effective expenditure of the ration allowance in terms of an adequate dietary as well as the correct expenditure of money.

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The Food Supply of the United States

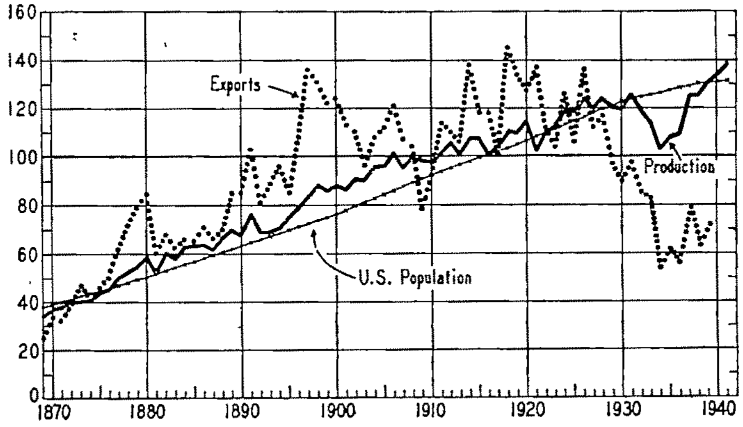
By John D. Black

OTHER articles have described, in as definite terms, as is possible, the military and civilian food needs of the United States. Any total survey of needs would also include lend-lease shipments, some small remaining exports to friendly noncombatant nations, shipments to territories of the United States, and increases in desired carry-overs for any of these purposes. Space and other considerations do not permit elaborating upon these in detail. Combined, they may represent anywhere from zero to half or more of the total probable requirements for different foods in 1943 and a somewhat larger percentage in 1944. The percentages will probably be largest for dried fruits, cheese, dried milk, pork and pork products, eggs, and wheat—for most of these running between 20 and 40 per cent. The 1944 percentages will probably be greater than the 1943 for pork and pork products, dried milk, cheese, eggs, and dehydrated vegetables; and smaller for canned vegetables and evaporated and condensed milk.

Clearly these quantities of food plus the supplies needed by the armed forces represent a considerable addition to the demands upon the agriculture of the United States. Not all of this, of course, is a net addition. We were exporting large quantities of some foods before the war—for example, in 1938, a fairly typical recent year, around an eighth of our total production of wheat, lard, and apples. Exports of pork, however, were only 2 per cent of domestic production. Chart 1 accompanying indicates the general trend of agricultural production and exports of the United States, but cotton represented 45 per cent of the exports of 1929, and 28 per cent of those of 1938.

But the Nation was also importing larger quantities of food in these years. Total agricultural imports were 40 per cent greater in value than the agricultural exports of 1938. The more important food imports, in order of value in 1938, were coffee, bananas, sugar, tobacco, meats and meat products, chocolate and cocoa, tea, other fruits, and

Chart 1. Index Numbers of Physical Volume of Agricultural Production and of Exports of Farm Products; Population of the United States; 1870–1940. (Index numbers—1910–14 = 100. Population in millions.)



live cattle. The first three items constituted nearly half of the total.

IMPACT OF THE WAR

The progress of the encroachment of the war activity upon the domestic food situation is indicated by the following statement published by the United States Department of Agriculture:

> Food needed for our enlarged military forces and for lend-lease shipment to our Allies will increase sharply in 1943, compared with the total of these requirements in 1942. Military and lend-lease purchases of food in 1943 are expected to be equivalent to about 20 per cent of current domestic production, compared with about 13 per cent this year and 4 per cent in 1941. Exports outside of lend-lease in 1943 will not be of much significance, but they may be about as large as they have been this year. The total supply of food (production plus stocks) probably will be of record size in 1943. The amount available to the average civilian consumer, however, may be somewhat smaller than the large supplies of the preceding two years, although considerably larger than the prewar 1935–39 average.[1]

The last statement in the foregoing needs amplification. Chart 1 shows how agricultural production fell off to very low levels in 1932–36. This was due partly to severe droughts in some of these years and partly to the production control programs. Output did not catch up with population growth again until 1939. The average for the years 1935–39 is therefore relatively low. The 1940 agricultural output was 10 per cent above the 1935–39 average, and the 1941 output 13 per cent above it. Then came the phenomenal production of 1942, at a level 26 per cent above 1935–39. The production goals set for 1942 called for an average increase of 6 per cent above 1941. This was exceeded by 6 per cent. Probably half of the increase, however, is to be attributed to the highly favorable weather. But 1941 was a good crop year too. The crop yield indexes for 1935 to 1942 (1935–39 = 100) have ranged by years as follows:

1935	95
1936	82
1937	110
1938	106
1939	107
1940	112
1941	114
1942	124 (Preliminary)

Pasture conditions averaged 19.6 per cent better in 1942 than in 1935–39, and 10.9 per cent higher in 1941. The comparable percentages for range conditions were 7.6 per cent for 1942 and 11.5 per cent for 1941.

The increase in agricultural output since 1939 could properly be considered only as getting back to a normal provision for our food and other agricultural needs, except for the disturbance produced by the war. With fuller employment, domestic food consumption would have expanded, and probably exports would have increased also. The first effect of the war was to cut off some exports. But presently a strong lend-lease demand developed; and after December 7, 1941 many food imports became too wasteful of shipping to continue. The rapid increase in domestic employment and income had increased domestic food consumption by 1942 to 10 per cent above the 1935–39 average.

PRODUCTION GOALS

The only major agricultural production goals that had been announced when this number of THE ANNALS went to press were that for wheat at 55 million acres or 98.5 per cent of the 1941 acreage, and that for hogs at 10 per cent above 1941. It is expected that in general the goals set will average about the same as for 1941; with corn up a little, cotton down a little, and so forth.

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[1] *The Demand and Price Situation,* Oct. 1942, p. 7.

If the weather is average, the outputs resulting from planting and breeding at these goal levels will not be enough to provide for the large military, lend-lease, and other demands outlined above without encroaching upon civilian consumption or drawing upon civilian reserves. If the weather is below average, which is what we should plan for, the curtailment of domestic civilian consumption will need to be of sizable dimensions. If we are to go on blithely eating what we have, actual shortages of part of the foods will appear shortly, but for others, not until early in 1944. But the only safe plan is to build up our reserves rather than deplete them, beginning almost at once. Hence virtual shortages for many food items can properly be said to exist even now; and rationing needs to be made general before many months.

The following paragraphs emanate from the United States Department of Agriculture, and are clearly conservative. Nevertheless, they indicate the relative position of the different foods with respect to rationing:

> Production of foods generally has increased enough to meet military and lend-lease needs, and still leave the average consumer in 1943 more than he had in the 1935–39 period. However, the increase in consumer income has been much larger than the increase in production. The result has been a growing upward pressure on prices. In the absence of rationing, this has caused an inequitable distribution of meats as between various localities. It also forced price ceilings upward on some food products, and for others not brought under ceilings until this month it has resulted in a continued rapid rise in prices.
>
> In order to avoid the usual effects on prices next year of rising consumer incomes —with available per capita supplies of food expected to remain generally about unchanged from this year—Government controls have been broadened and strengthened under the amended Emergency Price Control Act. Ninety per cent of all the foods in the average family budget are now subject to price ceilings, but rationing of a growing list of products will become necessary. Generally speaking, shortages of civilian supplies in relation to probable consumer buying power will extend to most food products except cereals and citrus fruits. Poultry and fresh milk are borderline cases. The adequacy of supplies of some foods will depend in part on the effects of shifts in demand resulting from shortages of competitive products. For instance, if the rationing of poultry is necessary later, it probably will be due to the shortage of meats. Rationing of fresh milk may be avoided by rationing products manufactured from milk. Rationing probably will not be needed, at least for many months, for most cereals, fresh fruits, vegetables generally, and eggs. Meats present the most urgent rationing problem at present.[2]

The goals for 1943 are not being set higher than indicated, mainly because manpower will not be available to produce more. Other limiting factors are transportation, fertilizer, and machinery. A rational mobilization of rural manpower would go far toward offsetting these difficulties, but progress in that direction is making headway slowly as this is being written.

But in any case we shall have wheat enough to eat, almost regardless of what happens. The old crop carry-over plus the new crop makes a grand total of 1,615 million bushels, compared with 750 millions as normal domestic utilization for a year. Canada has a store of 615 million bushels.

We could, as a last resort, call for 75 to 78 per cent extraction in flour manufacture; or even 85 per cent.

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[2] *The Demand and Price Situation,* Oct. 1942, p. 7.

The Food Situation in a World at War

THE articles included in this group do not attempt to present a complete description of the food situation in the countries directly effected by the war. They are intended rather to indicate the general features of the situation in the different groups of countries involved. The food supply of the United Kingdom is affected by the war in one way, that of Italy in another, that of Russia in another, and that of Latin America in still another way.

The information presented is sketchy and not very accurate in any particular instance, but the over-all situation is about as described even within one country. The exception to this is probably Russia. Students of the Russian food situation, coming at it from different approaches and using different methods of combining the data, have arrived at somewhat divergent conclusions. None of these, however, give any basis for optimism about food conditions until large areas of western Russia can be reconquered and restored to agricultural production.

The contributors of these articles are nearly all in the public service and in as close touch with the available data as one can be. If others had written these articles, they would have been obliged to obtain most of their information from this group.—J. D. BLACK.

IN THE UNITED KINGDOM

By E. M. H. LLOYD

THE people of Britain have been holding their own for three years like a beleaguered garrison, exposed to submarine and bomber attack and threatened with land invasion. Successful provisioning and rationing of the garrison has done much to make this possible.

Before the war the Government had acquired reserves of wheat, sugar, and fats, and from the outset the Ministry of Food has been the sole buyer of imported cereals, meat, sugar, oilseeds, and dairy produce.

The policy of the Government has been to reduce imports to the extent required by the shipping position. This has been done by increasing home food production, by cutting out the more bulky and less essential food imports, and by rationing nearly all foods except bread, flour, potatoes, and fresh fruit and vegetables. Economy of tonnage has meant exclusion of animal feed cargoes amounting to about six million tons in peacetime; elimination of canned and fresh fruit imports to the extent of more than a million tons; substitution of national whole-meal flour of 85 per cent extraction for ordinary white flour; and increased imports of concentrated foods like cheese, dried milk, dried eggs, and lard from the United States.

British farmers have increased their acreage under crops by more than 50 per cent. Wheat output is nearly 40 per cent, barley 45 per cent, and oats 75 per cent higher than in 1939. Owing to reduced imports of animal feed, home-produced meat and eggs are down; but milk production during the spring and summer was higher than in 1941.

Meat consumption has been cut by about 25 per cent and sugar by one-third; fresh and canned fruits are limited to home supplies; the sale of cream and ice cream has been prohibited to conserve milk supplies. Fat supplies are about 10 per cent below normal, the reduction in butter being offset by increased animal and vegetable lard and margarine. Tea has been cut by about 25 per cent. Dried fruits, preserves, biscuits, canned meats, and canned fish add variety to what would otherwise be a monotonous diet, and are rationed under a points rationing scheme which gives freedom of choice to consumers. The most popular of this group of foods, the demand for which cannot be fully met, is dried vine fruits. Even chocolate and candy are now rationed at three ounces per head per week.

Bread and potatoes are unrationed. They serve as a buffer to fill any deficiency in total calories, and consumption of these foods is somewhat higher than before the war.

For 90 per cent of the population, wartime diet thus represents a reduction to a simpler and more Spartan standard, while the poorest 10 per cent are probably better fed than before. The leveling process has been brought about both by price control and by rationing. Maximum prices are fixed for all foods except some fresh fruits and vegetables. Increased wartime costs are met by food subsidies now running at about £125,000,000 ($500,000,000) per annum. Mothers, children, and invalids are given priority in the supply of milk, orange juice, and vitamin products. Differential supplies of meat and other rationed foods are allotted to workers' canteens; miners, agricultural laborers, and other outdoor workers without canteen facilities get twice the normal cheese ration. Meals taken in industrial canteens, "British Restaurants," and ordinary catering establishments account for about 10 per cent of total consumption.

Technique of control

The technique of control varies with different commodities, but the general picture may be summarized as follows:

1. Imported foods are acquired by the Ministry of Food in the country of origin, either through bulk contracts negotiated with governments (from the United States under lend-lease) or by purchases at market prices from exporters. They are handled on arrival at the ports by importers' pools acting as central agencies of the Ministry. The Ministry retains ownership in bulk stocks. It releases supplies at fixed prices to processors or wholesalers for distribution to retailers, and fixes manufacturers', wholesalers', and retailers' margins.

2. The Ministry fixes prices of home-produced foodstuffs in agreement with the Agricultural Departments. It has set up trade organizations to purchase on its behalf home-produced cattle, sheep, hogs, cheese, and eggs. It directs the purchase and distribution, or in some degree regulates the marketing, of milk, wheat, oats, potatoes, and other crops.

3. Allocation to individual firms, control of prices, standardization of qualities, and economy of transportation are facilitated through the creation of Wartime Associations controlled by the Ministry but managed by leading representatives of each trade or industry.

4. Consumers are tied to retailers of their choice for rations of meat, sugar, fats, cheese, eggs, and milk. Miscellaneous groceries are obtained under a points rationing scheme from any retailer.

5. Priority rations of milk and eggs are given to mothers, children, and invalids, and of cheese to agricultural workers and others. Differential allocations of meat, sugar, and fats are made to industrial workers in factory canteens.

6. The Ministry's trading losses, amounting to about £125,000,000 per annum, which are met by a subsidy from the Exchequer, have stabilized the cost-of-living index and thus promoted wage stability.

7. Nationwide publicity designed to

explain the Ministry's policy and raise the standard of food preparation in the home is carried on by means of food advice centers, exhibits, press advertisements, lectures, and radio talks.

8. The total staff employed by the Ministry is approximately five thousand at headquarters and thirty thousand in seventeen divisional food offices and fifteen hundred local food offices.

9. There are about eight hundred enforcement officers. Eighty per cent of the prosecutions are for comparatively minor offenses; serious evasion is confined to a few criminals and "black market" operators, and is severely punished.

To sum up

In spite of lower imports, the population as a whole is probably fed as well as or better than a year ago. This is mainly due to two factors: first, lend-lease shipments from the United States, and second, enforced changes in national diet and stricter control of distribution.

Looking to the future, shipping and military necessities will continue to govern the food situation. Lord Woolton has warned the British public that further restrictions and changes in diet will be necessary in order to release shipping. There will be less variety of diet and greater consumption of potatoes, cheese, carrots, and green vegetables. Fresh eggs will be progressively replaced by imported egg powder. Milk consumption, which was well maintained during the past summer, will have to be curtailed this winter, but there will be a larger supply, given fair weather conditions, of leafy green vegetables.

When victory is achieved, rationing and price control are likely to remain for some time, since shipping and supplies will be needed for the relief of Europe. The special measures taken during the war, first to safeguard the nutrition of nursing and pregnant mothers and young children, and second, to make wider provision for feeding men at their jobs in factory canteens, are likely to remain as permanent features of postwar policy.

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CENTRAL AND NORTHERN EUROPE

By J. H. RICHTER

THE food self-sufficiency of central and northern Europe, at the standards of domestic agricultural production and consumption prevailing before the outbreak of the war, was over 80 per cent of total food consumption on a caloric basis. The western fringe of the area, including Switzerland, the Low Countries, and Norway, depended heavily on imports of foodstuffs and feedstuffs. Most of the central part, including Austria, Czechoslovakia, Germany, and Sweden, had attained a relatively high degree of self-sufficiency. Denmark, despite a high standard of domestic food consumption, and Poland, at a low nutritional standard, basically were surplus producers. Finland had a sizable deficit. These basic prewar conditions have been very important determinants of the food situation in this area since the German conquests of 1939–40.

Present food conditions in Belgium

and Norway are very unfavorable, and the people's diet is submarginal. These countries are always greatly dependent on the importation of bread grains, feedstuffs, and fats and oils, and the wartime reduction or elimination of imports has greatly disrupted their food economy. Moreover, German takings of food—for example, fish from Norway and meat from Belgium—on the whole have considerably outweighed the quantities of grain, potatoes, and sugar supplied by Germany or coming from German diversions from other countries. Poland also makes significant contributions to the German food supply, and in central Poland at least the Polish and Jewish populations are subjected to grave privations.

A better, though still unfavorable, situation obtains in the Netherlands. Sweden, basically about 90 per cent self-sufficient in food, and Switzerland, with continued access to overseas supplies, have maintained a favorable standard of nutrition, although not without important ration restrictions. Denmark, too, continues to be one of the best-fed countries in wartime Europe. Before the war, Denmark exported very substantial quantities of livestock products to the United Kingdom and Germany, production of which was largely based on imported grain and feed concentrates. However, the country was a true surplus producer of food, so that the elimination of those imports did not completely do away with its capacity to export some butter, eggs, and livestock. Such exports to Germany continue on a moderate scale, yet enough is left for the Danes to maintain the highest food allowances in all of rationed Europe.

In Germany, Austria, and Czechoslovakia the food situation in the first two and one-half years of war remained relatively favorable, although the reduction in civilian consumption of certain foods was substantial. The rationing system clearly favors large-size families, and, above all, those consumer groups which most directly sustain Germany's military, industrial, and agricultural war effort. The remaining class of consumers has undergone a very considerable restriction in its food consumption. The situation deteriorated further in the spring of 1942, when potato supplies were low and the rations of bread, meat, and fats were cut rather drastically; but food allowances still compare favorably with those of 1917 and 1918, particularly in fats.

There is no indication that the present food situation in Germany is desperate, although it has doubtless become uncomfortable, and perhaps even more than that. As against 1914–18, Germany's considerably better food position in this war is due to substantially larger supplies from her own much larger agricultural production, from considerable stocks accumulated before the outbreak of war, and from appreciably larger and more diversified takings from other continental countries, most of which are now under her control.

The future of the food situation in central and northern Europe is uncertain and will largely depend on the military course of the war. In the end, it is the military situation that will decide whether or not Germany will be able in time to alleviate existing shortages of labor, draft power, and fertilizer; to reorganize agriculture in the east; and to supply required means of agricultural production.

The postwar outlook is shrouded in still greater uncertainty. At present it looks as if substantial relief supplies of food will be needed in practically all continental countries; the length and future course of the war will determine the extent of such needs. Later developments in the Continent's agriculture and the Continent's import requirements, in a period of reconstruction and thereafter, will largely depend on the terms of the peace settlement and on the type of political and economic regime that will dominate in the world at large. In a rich world, continental agriculture as a whole will not necessarily decline, though it may undergo some shifts; higher food standards, especially if accompanied by a continued increase in population, may raise import requirements in agricultural products by a substantial proportion. In a poor world, the highest possible food self-sufficiency, even if it entailed reduced standards of nutrition, would be one of the goals of an impoverished continental economy.

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SOUTHWESTERN EUROPE

By LOIS BACON

THE food situation in southwestern Europe has been determined not only by smaller supplies than the average in prewar times, but, what is more important, by the maldistribution of the quantities available. Supplies have been reduced as a result of below-average crops in 1940 and 1941, especially in Spain and France, limited possibilities of importation, German requisitions from France, and the continued shipment of such prewar exports as Spanish olive oil and fruit, and Italian rice, cheese, fruits, and vegetables. Portugal's supply position is relatively favorable, though shortages have recently led to some local rationing of certain foods. In France, Spain, and Italy, rationing has been widely resorted to, without, however, insuring an equitable division of reduced supplies which would have prevented the extreme hardships suffered by many people.

Local rationing or allotment, used by Spain in practice even for such basic foods as bread and oil, does not pretend to equalize supplies over the country as a whole. Nor do the nationwide rations fixed in Italy and France for most of the staples, sometimes with differentiation according to consumer categories, achieve this goal, since they do not appear to utilize all the available supplies. For example, a comparison between estimated wheat supplies in 1941–42 and estimated ration requirements leaves large quantities of wheat unaccounted for in France and Italy. Moreover, it is doubtful whether the low rations were even officially maintained everywhere, at least in France, whose rationing orders specifically authorize a reduction in departments where supplies are insufficient.

A major obstacle to the equitable distribution of supplies is the strong resistance of peasants to regulations restricting food and feed consumption on farms and requiring the sale of the surplus at prices far lower than can be obtained in the thriving black market. Illegal utilization on farms and black market operations have been largely responsible for throwing the burden of reduced consumption on those in cities and towns who have no connection with peasants or who cannot afford to pay the black market prices, and on those in rural areas where farmers concentrate on the production of specialties. Internal transportation difficulties, in some places amounting to disruption, have also played an important part in hindering the adjustment of supplies between surplus and deficit areas.

If the official system of distribution could be made more effective, it would be possible, with no increase in supplies, to improve perceptibly the situation in urban and deficit rural areas where the need is desperate. Should weather conditions be sufficiently favorable to outweight the effects of scarcity of means of production, domestic output would go far toward restoring the normal level of supplies of vegetable foods in the Iberian Peninsula, which in ordinary times is virtually self-sufficient. The prewar deficit in France and Italy was also small, except in the case of fats. As long as military or diplomatic operations do not materially change the picture, however, France and Italy will be under greater pressure to contribute to German requirements and have more limited opportunities to import than Spain and Portugal, which can still carry on trade with the United Nations and neutrals outside Europe. At present, the only significant surplus countries within reach of Italy and France are the Danubian states and some French African possessions where hoarding and black market operations, as well as shortage of transportation facilities, have become factors affecting their export capacity.

Developments after the war is over can hardly be forecast until it becomes clear whether concrete postwar settlements are likely to accentuate or moderate the urge for self-sufficiency arising out of depression and feelings of insecurity. Unless this urge is moderated, there is little reason to expect more than a temporary reversal of the nationalistic policies generally pursued in prewar times, when high trade barriers, which were both a cause and an effect of the difficulty of maintaining exports, stimulated domestic output of essential foodstuffs in the countries of southwestern Europe, and otherwise minimized their dependence on foreign supplies.

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SOUTHEASTERN EUROPE

By CLAYTON E. WHIPPLE

ABOUT 75 per cent of the population of southeastern Europe[1] is agricultural. Apart from Greece, the countries are normally more than self-sufficient in food production, and the most important European sources of grain imports for the Axis Powers. Each country, however, has deficit regions which must secure food and feed crops from the surplus regions. Due to a combination of geographical factors, each country has numerous types of farming regions with significant variations in crop and animal enterprises. Greece, though essentially an agricultural country, normally imports large quantities of cereals, particularly wheat, corn, and rice; meats and livestock for slaughter; condensed milk; and all its sugar supply. Normally its principal foodstuffs exports include table grapes, currants, raisins, dried figs, olives and olive oil, and citrus fruits.

Apart from areas where military operations have occurred or guerrilla warfare continues, agriculture in southeastern Europe has been relatively undisturbed. There has been some reduction in production during 1942, due to a combination of unfavorable factors including (1) a shortage of labor and draft power, (2) unfavorable weather, and (3) disturbed conditions in reannexed or newly acquired territories. However, because of surplus agricultural population, because a large share of the ordinary farm work is normally done by women and children, and because of the primitive nature of the farming system, the region has been less affected than would be more highly developed regions by the prevailing situation.

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[1] Hungary, Yugoslavia, Rumania, Bulgaria, and Greece.

Within the region there are wide discrepancies in distribution of food stocks. In addition to the relatively large rations officially allotted to the peasant population, large supplies of essential foodstuffs have been hoarded. Large stocks have been reserved for army consumption, and the countries have had to comply with German demands for large quantities of grains, oilseeds, meat, dairy products, and fruits. No efforts have been spared to exact the maximum amount of supplies consistent with the policy of maintaining productive capacity and preventing the open opposition of the peasant populations. To this end the system involves the payments of high prices to the peasants by the national government, which in turn is reimbursed by Germany with surplus industrial products or increasingly with credits for the future. The food products still remaining are then more or less severely rationed among the city populations, depending upon the degree of inadequacy.

The metropolitan area of Athens has suffered much more than Sofia, Bucharest, and Budapest, which have been little affected with relation to normal consumption, and even more than Belgrade and Zagreb, which are surrounded by agricultural regions. As a result of invasion and devastation, the breakdown of internal transportation and interruption of seaborne supplies, the situation in the Athens area is catastrophic.

The normal diet of the peasant populations of the region is far from ideal, except in a few districts where a wide range of foodstuffs are produced. Even in these districts, the tendency is to sell all the market will take, and few eggs and little milk or dairy products are consumed at home. For the region as a whole, bread, often of poor quality, represents about 70 per cent of the total caloric intake, while the consumption of meat, dairy products, fruits, and vegetables is very low. In countries producing sugar beets, the annual per capita sugar consumption averages about five kilograms.

Any postwar changes leading to a more rational diet in these countries would have important effects upon agricultural production and trade in Europe.

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THE RUSSIAN FOOD SITUATION

By Lazar Volin

THE Russian food position during the present conflict has been much more difficult than during the first World War. Moreover, it has deteriorated with the progress of the Nazi invasion eastward and southward. War operations in 1914–17 were confined to the fringes of the Czar's empire, so that the area producing agricultural surpluses remained practically intact in Russian hands. Now, however, the most fertile part of the surplus area, extending as far east as the lower Volga, has been overrun by the enemy.

After fourteen months of war,[2] the Soviet Union has lost, through Nazi occupation, roughly over 40 per cent of the acreage devoted to rye, which is the staple bread grain of the Russian masses, and about a similar proportion of the wheat acreage. The lost wheat area, comprising over three-fourths of the winter wheat belt, includes the highest-yielding wheat lands in Russia. Other approximate crop acreage losses include over 60 per cent for barley, nearly 30 per cent for oats, 90 per cent for sugar beets, nearly 60 per cent for sunflower seed (the most important source of vegetable oil in Russia), over 50 per cent for flax, 60 per cent for hemp, and over 50 per cent each for potatoes and tobacco. Altogether, over 40 per cent of the prewar crop area is in the Nazi-occupied territory.

This fertile area is the famous Russian granary where the huge exports of small grains originated before the first World War.[3] But it fed not only western Europe before 1914; it also continuously supplied the deficiency in grains and oilseeds and all of the sugar to the less fertile and more industrialized regions of central and northwestern Russia, including the two principal cities of the Soviet Union, Moscow and Leningrad, with a combined population in 1939 of over 7,000,000 people. The strategically important Transcaucasia (the territory extending from the Caucasus Mountains southward to the borders of Iran and Turkey), with its petroleum, manganese, cotton, and various subtropical crops, normally also relied for shipments of grain on the surplus area now occupied by the Nazis.

The Soviet Union still possesses a surplus grain and livestock area which extends from the middle Volga Basin into the western Siberian plain; but climatic conditions in this eastern area are less favorable to agriculture than in the west. It is predominantly a spring grain belt, with spring wheat as the principal crop. Relatively little winter grain, especially high-yielding winter wheat, is grown there, though acreages under winter crops have been on the increase in recent years. Much of this region is in the semiarid zone where frequent and devastating droughts are common. Railroad transportation facilities, too, are much less extensive than in the west.

In general, the present free Russian territory, including the border regions of Transcaucasia, Turkistan (the principal Soviet cotton-growing area), and the Far East, is normally deficit with respect to grain. The importance of the latter in the Russian diet cannot be overemphasized, as it constitutes, according to the Food Research Institute, from 80 to 90 per cent of the caloric intake. The situation is aggravated by the influx of population evacuated from the occupied regions, by the increased requirements of the army, by the serious shortages of most foodstuffs other than grain, by hoarding, and by difficulties of distribution.

The Soviet Government, which has

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[2] Written in September 1942.

[3] The Soviet Union had smaller export surpluses of foodstuffs than did Russia before the first World War. During the five years preceding the declaration of war in 1914, Russia annually exported an average of 12 million short tons of grain (wheat, rye, barley, oats, and corn), as compared with an average of about 1 1 million tons during the five-year period 1933–34 to 1937–38. Butter exports averaged 150 million pounds from 1909 to 1913, as compared with 63 million from 1933 to 1937. For a discussion of the problem of Russian grain exports by the writer, see *Foreign Agriculture,* May 1941.

exercised sweeping control over collectivized Russian agriculture, has bent every effort since the invasion to increase the acreage under grain, potatoes, vegetables, sugar beets, oilseeds, and tobacco. In fact, such expansion, especially with respect to grain, began in the eastern regions even before the war. But on the most optimistic view, these efforts can be expected only partly to relieve the Russian food shortages. As a result, assistance of the Allies on a substantial scale seems essential. The supply picture might have been even less favorable had it not been for the mechanization of Russian agriculture. But mechanization had its reverse side, since it greatly increased the dependence of Russian agriculture on skilled labor and on industry for mechanical equipment, and especially for petroleum. This new dependence has created difficult problems of supply under war conditions.

By the same token, agricultural mechanization proved to be the nemesis of the Nazis in the occupied regions. While the application of the scorched earth policy by the retreating Russians to growing crops was apparently of doubtful success, it was highly effective in the case of tractors and other farm machinery. The Germans were able to repair only a small number of tractors, and consequently a large proportion of the crop area for the 1942 harvest remained unsown in the occupied regions.

In the North Caucasus and Don regions, however, which were invaded in the summer of 1942, at least part of the crop sown during the preceding autumn and spring must have fallen into Nazi hands, as was the case in 1941 in the Ukraine. That the exploitation of the rich agricultural land in the invaded area has proved no easy task is admitted even by Nazi sources. Certainly no sizable surpluses of foodstuffs from the Russian bread basket are in the cards for export to Germany in 1942–43. But following the familiar Nazi pattern, the German Army will live at least partly on the invaded country even if it means serious privation or starvation of the native population, and the people in unoccupied Russia will be deprived of valuable food supplies. The reconquest of the invaded and plundered territories in the winter of 1942–43, far from easing, would aggravate Soviet food difficulties, since it would mean a larger number of mouths to feed and acres to seed with few additional supplies until the 1943 harvest.

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THE FOOD SITUATION IN ASIA

By W. I. LADEJINSKY

AN EXAMINATION of the food situation in the Far East and southeastern Asia reveals that on the whole these areas are self-sufficient in principal foodstuffs and likely to remain so in the years to come. Not all the ten countries[4] produce a sufficient volume of rice; Japan proper and British Malaya are countries in point. On the other hand, French Indo-China, Thailand, and Burma are the largest surplus producers of rice in the world.

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[4] Japan proper, Manchuria, China, Philippine Islands, Netherlands Indies, British Malaya, French Indo-China, Thailand, Burma, and India.

Their combined surplus of twelve to thirteen billion pounds furnishes about 95 per cent of all the rice that enters world trade.

Rice is the most important food product in all of the countries except North China and Manchuria. Next in order of importance are fish, beans, wheat, corn, vegetables, and fruit. The usual imports of certain quantities of wheat flour, animal and dairy products, and a variety of other food products are essentially luxuries as far as the natives are concerned, and are consumed by the resident whites and the well-to-do upper strata of the native population. Elimination of such imports would not lessen the self-sufficiency of those countries nor would it result in any hardship for their native populations. The decreased fish catch, however, will cause hardship.

In years of good crops, China is practically self-sufficient; but at present the food supplies of both occupied and free China are below normal requirements. Production of major crops in 1941 and 1942 is below average, and marketing facilities and distribution continue to be badly disrupted. In addition, vital agricultural supplies have been taken out of the country to Japan. Manchuria is a surplus food producer, and despite a reduction in food output in recent years, present production is still sufficient to meet domestic requirements and provide Japan with a volume of soybeans. Barring crop failures, India was practically self-sufficient before the separation of Burma. India proper relied upon Burma for 6 to 8 per cent of its rice consumption, and with the Japanese occupation of Burma the food situation in India has worsened. Relief may come from a substitution of food crops for cotton and jute in some of the acreage now under the latter.

The Philippines are almost self-sufficient in food, although they depend on a small quantity of a large variety of imported foodstuffs. With but one exception, fish, the Netherlands Indies now produce enough food to meet the requirements of the native population. Of all the Asiatic countries, British Malaya is farthest from self-sufficient in food, since it depends for two-thirds of its rice requirements upon imports from neighboring Thailand and Burma. If, on the other hand, synthetic rubber production, which is being developed now, should seriously affect the position of natural rubber in the postwar years, some of the land under rubber in British Malaya could be converted to food crops.

The food situation of Japan, the only Axis member in Asia waging war against the United Nations, is of particular interest. Grains, legumes, roots, fruit crops, and fish constitute Japan's diet. Rice is Japan's staple food, and although other grains are also consumed, they supplement rather than replace rice. Normally, Japan proper produces about 83 per cent of its requirements, while most of the remainder is imported from the Japanese colonies, Korea and Formosa. On the whole, 99 per cent of all rice consumed in Japan proper is supplied from sources within the Japanese Empire. Japan's position is even stronger with respect to wheat and other grains, tuber and root crops, vegetables, and fruit. Soybeans are the principal leguminous crop, and are used in Japan as a source of both food and fertilizer. Japan produces only 30 per cent of its requirements, which amount to from 40 to 45 million bushels. The remainder is imported from Manchuria (75 per cent) and Korea (25 per cent). Manchuria being essentially a Japanese colony, Japan for all practical purposes may be said to be self-sufficient in soybeans. Fish and fish products, the per capita consumption of which amounts to over a hundred pounds, rather than meat and dairy products, constitute Japan's most important source of animal protein.

Normally the fish catch of Japan not only is sufficient to satisfy domestic requirements, but also furnishes one of the largest items in Japan's export trade.

The heavy drain on manpower in Japanese villages, the sharp fall in the number of the draft animals available, the difficulties in obtaining supplies of fertilizer—all these war developments undoubtedly tend to reduce the agricultural output of the country. Yet with the exception of fish, Japan is not likely to suffer from a shortage of food, particularly rice. In 1941–42 Japan may not have had to draw upon its carry-over of possibly seven billion pounds, or three times the normal carry-over, let alone upon the available surpluses of the occupied French Indo-China, Thailand, and Burma. Roots, fruit crops, and vegetables continue to be available from domestic production, and soybeans, in diminished quantities, to be sure, from nearby Manchuria.

Less satisfactory is the Japanese position with respect to fish supplies. The supply close to the shore seems to have diminished considerably in recent years, and fishermen have been obliged even in the coastal fisheries to go farther out to sea. That being the case, Japan's catch is bound to diminish at a time when sea warfare is carried on in Japanese waters; the same situation would prevail if the fishermen were handicapped by a drastic curtailment of fuel for their boats.

In conclusion, it may be said that as long as Japan succeeds in keeping open the sea lanes with the old and newly conquered colonies, she will not suffer from a shortage of food. Failure to maintain the sea routes with the colonies would have the opposite effect.

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THE OTHER AMERICAS

By Pedro N. Almonacid

The other Americas appear to be self-sufficient in regard to food. On the whole they produce a large surplus of foods, which is normally exported to Europe. But when individual countries and regions are considered, the picture changes. Generally speaking, the surplus food producing countries are in the temperate zone of South America,[5] and self-sufficiency decreases as we approach the Caribbean Sea and Central America. In peacetime there is a flow of foods from the southern and northern temperate zones toward the central regions. This flow consists most largely of wheat, wheat flour, and rice; other products are lard, fish, potatoes, beans, onions, and canned and dried milk. Small quantities of corned beef and pork products are also imported into the northern part of South America and into Central America, and there is an important borderline trade in livestock on the hoof. These countries are generally short of animal proteins, and normally in recent years they have had a net deficit of the so-called protective foods. Roughly, 75 per cent of the tonnage of food imported has been wheat, wheat flour, and rice.

Table 1 gives the per capita consumption of foods in recent years in South American countries. It was not possible to secure data for Central America and

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[5] This is the so-called River Plate zone, with Argentina as the center.

TABLE 1—PER CAPITA CONSUMPTION IN SOUTH AMERICA OF PRINCIPAL FOODS IN RECENT YEARS[6]
(In Kilograms)[f]

Principal Foods	Standard[a]	Argentina	Zones		
			Temperate[b]	Subtropical[c]	Tropical[d]
Basic foods					
Wheat	127.8	152.5	150.7	38.4	11.1
Mandioca	23.3	16.7	16.7	24.9	[e]
Rice	19.8	7.8	7.2	23.9	21.4
Sugar	37.5	33.3	31.3	20.2	8.2
Potatoes	105.6	58.2	60.4	28.6	19.3
Shortening	6.6	6.8	4.8	0.7	0.5
Protective foods					
Meats	63.1	136.5	109.5	49.4	31.1
Milk	126.0	135.3	105.6	33.3	53.3
Butter	8.5	2.0	1.5	0.5	0.1
Cheese	4.3	3.4	2.7	0.7	0.2
Fruits	60.6	59.6	33.4	68.6	[e]
Vegetables	60.0	9.8	10.4	20.0	[e]
Beverages					
Wine[f]	29.9	55.5	51.0	1.8	0.7
Beer[f]	60.0	11.1	10.3	0.2	8.7
Yerba maté	8.1	8.1	6.8	1.0	[e]
Coffee	3.3	1.9	1.6	2.4	3.0
Tea	1.2	0.2	0.2	[e]	[e]

[a] Average of Argentina and principal European countries taken as a rough standard to serve as a basis of comparison.
[b] Uruguay, Argentina, and Chile.
[c] Brazil, Peru, Bolivia, and Paraguay.
[d] Colombia, Venezuela, and Ecuador.
[e] Data not available.
[f] Figures for wine and beer are in liters.

the Caribbean Islands, but it is likely that the amount of food consumed in that part of the hemisphere is fairly similar to that of the subtropical and tropical zones of South America.

Into this food situation, not satisfactory at the best, has been thrust all the disorganizing effect of the second World War. New demands are being made upon some countries for strategic raw materials, and other products have lost their former outlets because of shipping hazards or for other reasons. The numerous shifts have been so sudden that there has been no time to think in terms of smooth adjustments. Consequently, from the Rio Grande down to Cape Horn, countless problems have arisen which will need to be considered carefully if it is desired to maintain an increasing contribution of the other Americas to the war effort.

The most important single problem is that of transportation, either by sea or by land. There is no hope of solving it fully in the near future, but human ingenuity may smooth out many obstacles that at present seem insurmountable. For example, the acute shortage of protective foods in many areas may be helped by dehydration of beef, eggs, milk, and vegetables. Argentina is in a position to push such a development and thus contribute her part in meeting the needs for protective foods in those countries that will not be able in the short run to increase their domestic production.

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[6] Source: Emilio Llorens, *El Subconsumo de Alimentos en América del Sur,* Buenos Aires, 1942.

The food shortage is most critical in those countries that are mainly concentrating on minerals and other vital strategical materials for the war effort of the United States. Large groups in the population changed almost overnight from farming to mining because of the higher wages paid in the mines. The future domestic supply of food has thus been endangered, and the danger will become more acute if immediate action is not taken. The spiraling of food prices has not yet been checked in some countries, although efforts have been begun. According to the available indexes for the principal cities, food prices as compared with those of 1939 have risen more than 65 per cent in Rio de Janeiro (Brazil), more than 50 per cent in Santiago (Chile), more than 40 per cent in La Paz (Bolivia), and more than 25 per cent in Lima (Peru).[7]

Quick action is therefore necessary if serious dislocation in the cost of living is to be prevented. The United States and Argentina are the only countries in the Western Hemisphere that can fill the gaps immediately. But transportation is a serious obstacle. Perhaps in the short run, the deficit countries should encourage the production of certain basic crops, such as rice and potatoes, clearing the way for a fuller utilization of the existing wheat surplus of Argentina.

Steps have already been taken by the Brazilian and United States Governments to increase the production of food in the Amazon Basin and northern regions of Brazil.[8] The British and United States Governments have decided to build up stockpiles of foods in the West Indies through allotments of funds made by the Lend-Lease Administration to the Agricultural Marketing Administration. This will enable them to meet the food requirements of their possessions in the Caribbean area. Argentina could contribute more to alleviating the food shortage if its government could agree to take payment for its exports of foods in the form of dollar balances accumulated by the other Americas. Such a procedure seems logical in the present situation, since it is almost impossible to ship commodities in return.

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[7] The price rises have been less in Argentina, Uruguay, Mexico, and Cuba

[8] Under the agreement recently signed in Rio de Janeiro, the United States and Brazilian Governments will undertake to develop food production right at the place where it is most needed.

Wartime Food Administration—U. S. A.

By CLAUD F. CLAYTON and JOHN D. BLACK

THE United Kingdom now has both a Food Ministry and an Agricultural Department. The United States, at this writing, has no separate food administration. The nearest thing to it is a "Food Requirements Committee," with the Secretary of Agriculture as its Chairman, responsible to Donald Nelson of the War Production Board. The British Food Ministry acts on its own initiative and with its own staff. It is an operating organization. The Food Requirements Committee only recommends action to other agencies—it has no operating staff of its own.

The Food Requirements Committee probably represents only a stage in the development of some form of over-all food organization in the United States. What the next step will be is a principal subject of debate and forecast in Washington as this article goes to press.* Will we end with an agency outside of existing departments, or within the Department of Agriculture, or within WPB? Will it take over units now in the Department of Agriculture, the Office of Price Administration, and the War Production Board, becoming a vast operating organization on its own account? or will it be merely an agency that directs the action to be taken by operating units that retain their present connections? or will it become some combination of these?

THE BRITISH SETUP

This last is what really has developed in the United Kingdom. The Agricultural Department has an operating job to do—that of guiding, directing, and even managing in some cases, the production of foods on the farms. The general policy as to what is to be produced, however, is planned jointly by the Ministry of Food and the Agricultural Department, account being taken of the advice of agricultural production experts as to how much of what foods can be grown at home, of the limited space available for imports of animal feedstuffs, and of the foods most necessary to health. Once the farm products are produced, their handling is under the control of the Ministry of Food. It has become the sole purchaser of the country's food imports, and buys or controls the sale and price of almost everything the British farmer produces. Its control of prices is all-inclusive. It makes considerable use of subsidies to keep down the prices of important staple foods—flour, bread, potatoes, eggs, meat, and oatmeal—while permitting prices to farmers to rise to the levels which it considers necessary to cover costs. The Ministry of Food also plans and operates the food rationing program, except that it works out with the Ministry of Labor the allocation of foods to different classes of laborers. Finally, it has a Food Transport Division whose task it is to secure the most economic use possible of the food transport facilities of the nation, not only the internal facilities, but also the shipping used for imports.

The British Food Ministry therefore handles a wide range of important operations that are divided among different agencies in this country. Prices of farm products are here jointly controlled by the OPA and the Department of Agriculture, under the general guidance of the new Director of Economic Stabilization, James F. Byrnes. The WPB has major responsibility for directing the processing of food products. The Office of Defense Transportation undertakes to regulate the farm-to-market movement of foods. The Commodity Credit Corporation does the actual buying of foods in foreign countries, and by virtue of its handling of the loan program, plays a large part in purchases in the domestic market and application of subsidies. The Agricultural Marketing Administration buys for lend-lease, for domestic relief distribution, and for the building up of food reserves. Finally, the general direction of the purchase and shipping of foods for the United Nations is placed in the hands of the Combined Food Board, with Mr. R. H. Brand of the British Food Mission and Secretary Wickard as joint directors.

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* Since this was written, the Food Requirements Committee was abolished in the Executive order of December 6. Its place is taken in part by an Advisory Committee made up of representatives of about the same agencies.

FOOD ADMINISTRATION IN THE LAST WAR

It is apparent from the foregoing that considerable shuffling of agencies and concentration of authority would be necessary to place the food administration in the United States on a basis resembling that which prevails in the United Kingdom. Nevertheless, that is essentially what we had during the last war. A Food Administration was authorized by the Lever Food Control Act of 1917, with instructions to encourage and conserve production and control the distribution of food supplies and fuel. The Department of Agriculture retained charge of all on-farm activities in production and conservation, while the Food Administration exercised control of market organization and prices. The two agencies worked very closely together. The State Food Administrator in many cases was the State Director of Agricultural Extension. By November 1918, some 3,200 county and district food administration offices had been created. The county agent, or a special emergency food agent, worked out of these local offices. No direct controls over production were exercised, as under the AAA program since 1933. The county agents relied upon demonstration methods, distribution of circulars prepared by the Food Administration, and other educational devices. The state and local food administrators were responsible, however, for whatever rationing and allocation of foods was imposed in their territory.

AGRICULTURAL EXTENSION SERVICES

Because of the active part they played in the food program of the last war, the Agricultural Extension Services of various states expected to be drawn into the defense program promptly and actively. In the fall of 1940, under the leadership of the Division of State and Local Planning of the Bureau of Agricultural Economics, they began a careful inventory of the agriculture in their respective states from the standpoint of fitting their efforts in with those of the national defense and adapting them to the developing international situation. The reports of these inventories were completed during the winter and brought together and analyzed at a series of regional conferences.

On June 24, 1941, however, Secretary Wickard issued a directive creating state defense boards, later called war boards, and parallel organizations in each county. The director of the Extension Service had position on the state board only as a representative of one of several agencies. The chairman of the board in each case was the chairman of the state AAA. The same pattern was reproduced in the counties. Since that time, the position of the Agricultural Extension Service in the war effort, all the way from the general office in Washington down through the state offices to the county offices, has been uncertain and equivocal. It has varied considerably from state to state and from county to county, but in most situations it has not been such as to bring forth the best effort of the Extension Service, especially of that key man in agricultural affairs, the county agent. Many thousands of earnest local agricultural leaders have since that day functioned more or less under a psychology of frustration. The process by which this state of affairs has evolved needs to be explored with some care.

OVER-ALL ORGANIZATION

The first positive move in the direction of bringing agriculture into the defense effort was the inclusion in the National Defense Council in May 1940 of the Secretary of Agriculture, along with the Secretaries of War, Navy, Interior, Commerce, and Labor, and in the Advisory Commission to this Council, an Agricultural Division under Mr. Chester Davis of the Federal Reserve Board, formerly administrator of the AAA. This Agricultural Division made its program the maintaining of parity between industrial and farm prices, the preventing of shortages of farm products, the finding of means of utilizing agricultural surpluses, and finally, the decentralizing of war industries with a view to providing employment for idle rural labor.

It was evident by the end of 1940 that the National Defense Council and its Advisory Commission were not measuring up to the needs of the defense program. Accordingly, in January 1941 President Roosevelt announced an additional agency, the Office of Production Management, giving it responsibility for production, purchasing, and priorities. The Agricultural Division found itself with few responsibilities under this arrangement, and in April Mr. Davis resigned. On May 6 the functions of the Division were transferred to an Office of Agricultural Defense Relations (now the Office for Agricultural War Relations) in the Department of Agriculture, whose general function was to gear American agriculture into the defense program and handle all liaison with other war agencies. This included priorities affecting agriculture—farm machinery, chemicals, packing materials; provisions relating to the processing of farm products; adjustment of competing demands for labor; war plant location; and similar items. The directive to Secretary Wickard read:

> Even though located with the Department of Agriculture and responsible directly to you, this special Office should be considered an integral part of the emergency defense organization. In this role, the Office will be in a strategic position to work and co-operate with the several units of the Office for Emergency Management, the War and Navy Departments, and other defense agencies.

Nevertheless, this transfer meant that the issue that had developed between the National Defense Advisory Commission and the Department of Agriculture was settled in favor of the latter, and that for the time being no food agency would be set up outside the Department of Agriculture.

Mention is made in the foregoing directive of the Office for Emergency Management. This had been created in the meantime as a sort of over-all office of co-ordination close to the White House; and within this on April 11, 1941 was established the Office of Price Administration and Civilian Supply. Nothing in its instructions indicated that it was not to concern itself with prices of farm and food products, nor with the distribution of food supplies between military and civilian uses. Yet the Department of Agriculture had already announced support prices for pork and pork products, poultry and eggs, dairy products, and certain vegetables.

When the Emergency Price Control Act was passed in February 1942, it prohibited the setting of ceilings on farm products under levels averaging close to 120 per cent of parity, and required approval by the Secretary of Agriculture. This division of authority over price control on farm and food products is retained in the most recent legislation and Executive order, except as the general powers of the Director of Economic Stabilization may be brought to bear upon both agencies. In the intervening period, Mr. Henderson has set some ceilings on food products that have bothered the Department of Agriculture, and some support prices have been announced that make raising of ceilings inescapable.

FOOD PROCUREMENT

Aid to the Army and Navy in the purchase of foods was furnished by the Division of Purchases of the OPM, particularly by its Subsistence Branch organized in April 1941. This was largely manned with men from the food trades. At the same time, the Surplus Marketing Administration of the Department of Agriculture was buying food for lend-lease and other purposes. The May 27 issue of *Defense*, the official bulletin of OEM, spoke of an "expanded purchase program" for foodstuffs which went into effect on March 15, four days after passage of the Lend-Lease Act.

> One of the key phases of the U. S. Department of Agriculture's Food-for-Defense program is increased purchases of foodstuffs. In addition to concentrating needed food supplies, the purchases also are the means of supporting prices for farm products on which the Department is asking farmers to step up production. . . . Buying operations are carried on by the staff of the Surplus Marketing Administration. Foods purchased under the expanded purchase program may be used in any one of four ways—to supply Great Britain under the lend-lease program, to supply the Red Cross for war refugees, for direct distribution through state relief agencies and the school lunch program, and for release on the market in the case of unwarranted speculative price increases.

Also, early in May a Joint Anglo-American Food Committee was formed "as an advisory group to consider how the United States food resources can best be used to aid Great Britain and her allies and to frame general programs of food supply under provisions of the Lend-Lease Act." The Committee consisted of three from the British Food Mission, and Secretary Wickard and three others from the United States. The Agricultural Marketing Administration which succeeded SMA presently, is still buying domestic farm products for all the aforenamed purposes, and in addition for whatever stockpiles can be built up in anticipation of future lend-lease and military needs. The Commodity Credit Corporation, another unit in the Department of Agriculture, on orders transmitted through the Board of Economic Warfare, is doing the buying of needed agricultural products in foreign markets.

The absorption of the Office of Production Management into the War Production Board by way of the Supply Priorities and Allocations Board, and the separation of Civilian Supply from the Office of Price Administration (but not from Mr. Henderson) and it's transfer to OPM, later WPB, need not detain us. The important thing is that the distribution of the domestic food supply between civilian and other needs was still left under Donald Nelson, or to negotiation between him and the military branches and the Anglo-American Food Committee. The Food Supply Branch of the WPB assumed that it represented the national interest in such distribution, for surely such a matter could not be left to the Department of

Agriculture, well understood by the public to be subject to the selfish concerns of agriculture, and especially of the farm organizations. Yet its own position tended to be influenced by the recruiting of its principal officers mainly from food processing and food trade circles. Issues also arose between the Department of Agriculture and WPB over provision of processing facilities, over methods of contracting for fruits and vegetables for canning, and finally over priorities on farm machinery and supplies.

The initiation of rationing also raised some jurisdictional issues. The Agricultural Marketing Administration would have liked to handle the rationing of food along with its food stamp program, but OPA already had a head start with its tire-rationing scheme. Moreover, it was generally apparent that other things than foods would need to be rationed during the war, and it would not do to have two national rationing administrations. After it was decided to put sugar rationing in the OPA, it was still necessary to settle who was to control the distribution of the product from points of origin to points of consumption. The war had of course completely disarranged this. The Food Supply Branch of WPB claimed this assignment, but Mr. Nelson decided that the agency which did the rationing must also route the distribution. The same decision was made later with respect to meats.

The final steps to date in developing the over-all organization for handling food problems were the creation of the Food Requirements Committee on June 5, 1942, and of the Combined Food Board four days later. Before outlining their functioning, however, we need to go back and examine more closely the war boards established by Secretary Wickard in June 1941.

THE WAR BOARDS

In forming these war boards as he did, Secretary Wickard explained that the major part of the Department of Agriculture's defense job involved field work on farm production. Nevertheless, he appointed on each board a representative from each of the Department agencies whose services would be called upon to carry out departmental responsibilities in national defense. These agencies were the Bureau of Agricultural Economics, the Farm Security Administration, the Soil Conservation Service, the Farm Credit Administration, the Agricultural Marketing Service, the Forest Service, the Rural Electrification Administration, and the Federal-state co-operative Extension Service. The county boards were made up in the same way. The boards were authorized to "confer with, advise, and arrange co-operation with other defense agencies having state or local offices, and to arrange for maximum co-operation of all Department field personnel in defense undertakings." Specific assignments were to be handed down from time to time by the Secretary to the state boards, and through them to the county boards. The memorandum announcing these boards pointed out that "the usual co-operation relations with State Extension Services are not altered, nor is the normal functioning of the Department agencies in effectuating their non-defense responsibilities."

Secretary Wickard may have had other reasons than the one given for organizing the agricultural defense program in the field under AAA chairmen. Two commonly mentioned are that the AAA was the only agency with a setup in each county, and that it was the only one with a budget that would enable it to finance the necessary activities. Another reason may have been his close familiarity with the AAA organization. It was in this agency that he was reared and nurtured as a public official.

One alternative might have been to

make the state extension director the head of the state defense board, and the county agent the local head, much as was done in the last war. This would have taken advantage of the state and county agricultural planning boards that had been organized in recent years in most of the counties. Several arguments can be advanced against this, a superficial one being that not all counties had a county agent; a more fundamental one, that some of the State Extension Services were not staffed with the kind of personnel required for such an assignment. No doubt still other circumstances influenced Secretary Wickard against such a decision.

A third arrangement might have given the chairmanship in each state and each county to the ablest and most public-spirited man available for it, regardless of any agency affiliation. Since the program was mainly a production program, the AAA administrative funds could have been used for it, or at least Congress could have been asked to release them for it.

Not only are the state and local defense boards chairmaned by the AAA officials, but the whole organization is tied to the AAA Administrator in Washington, and all proposals coming up from states, and from counties through states, clear through him rather than through a separate national head of the agricultural defense organization who might have been attached directly to the Secretary.

FUNCTIONING OF AGRICULTURAL SETUP

As one would expect, the state and local defense boards (now war boards) organized on this basis have functioned in most states and in most respects as AAA agencies. All too frequently the published reports of war-board activities have credited them to the AAA. In consequence, the co-operation of other Federal agencies has been generally indifferent, and likewise that of the Agricultural Extension Service. This latter has been a serious loss, because the Extension Service has been aiding agricultural production in most counties ever since the last war, and has a better understanding of the lines which an agricultural war program should take than have the AAA officials, whose activities have in the past been confined to a rather narrow field. In order to make its maximum contribution to the war effort, the Extension Service of most states has therefore needed to carry on a program of its own which is more or less apart from the war-board program. There are few cases of actual opposition between the two programs; the loss arises from lack of integration of effort.

The way out of this dilemma may prove to be relatively simple. The urgency of war needs may force so large a conversion of the AAA program to a war basis that the state and local AAA officials may find themselves trying to carry out a program running nearly parallel with the Extension Service program, and the two groups may find themselves doing about the same thing. This has already happened in large measure in states in which the conventional AAA approach had had little place. Should this happen generally, Secretary Wickard's method of handling this problem will have had the very great merit of having reformed the AAA.

THE FOOD REQUIREMENTS COMMITTEE

The press release announcing the establishing of the Food Requirements Committee contains the following statements that indicate its organization and functions:

> The new Committee, named by Donald M. Nelson, Chairman of WPB, will determine civilian, military and foreign food requirements and has authority to step up or limit the domestic production of foods as well as the importation of foods and

agricultural materials from which foods are derived.

In addition to Secretary Wickard, the Committee will consist of representatives of the State, War and Navy Departments, Office of Lend-Lease Administration, Board of Economic Warfare, and the WPB divisions of Industry Operations, Materials and Civilian Supply.

Decisions of the Food Requirements Committee will be final, subject to the over-all direction and approval of the War Production Board.

Although the order retains final authority in the hands of the Chairman of WPB, the top agency concerned with the Nation's vast problems of production and supply, the Food Requirements Committee has received broad powers in the food field. These powers and functions, in turn, are given to the Department of Agriculture and other agencies, many of them already familiar with the job.

To carry out the final decisions of the Food Requirements Committee, today's order assigns definite functions to various agencies concerned with the food problem.

The Department of Agriculture will be responsible for:

1. Increasing or limiting domestic agricultural production in accordance with decisions of the Committee.
2. The earlier stages of food production in general.
3. The importation of foods and agricultural materials from which foods are derived. These powers have been delegated to the Commodity Credit Corporation within the Department of Agriculture by the Board of Economic Warfare.
4. The formulation of programs for conservation of critical foods or agricultural materials from which foods are derived.

The Division of Industry Operations of the WPB will be responsible for the later stages of food production in general, such as baking and the manufacture of candy and soft drinks.

The Materials Division of the WPB will be responsible in general for the processing of non-foods derived from agricultural materials which are a source of food. Soap would be an example of this.

To assist him in carrying out his function as chairman of the Food Requirements Committee, Secretary Wickard has assembled a small group which he has attached to the Office of Agricultural War Relations. One part of this staff is working on the over-all problem of requirements for the different foods and other farm products. Another part is working on production goals and other phases of the 1942–43 agricultural production program. Others are working on the farm manpower problem and on farm machinery and supplies.

In its early stages the Food Requirements Committee has proved to be cumbersome and slow in its decisions. It is therefore tending to stand in the way of prompt action. The disposition of agencies supposed to function under it is therefore to bring as few of their problems as possible before the Committee. Unfortunately, it was confronted almost at the outset with the meat crisis. The departments of government involved in this were mostly taken by surprise and were not ready with their answers. Consequently most of the lines of action had to be threshed out in actual committee meetings after interminable discussion.

This experience need not be repeated. In fact, the Committee can be managed in such a way as to get all the essential facts cleared and the desirable course of action agreed to by the agencies involved in advance of meetings. This will require, however, a somewhat larger staff than has thus far been provided. It does not now appear that the Committee will move in this direction. No doubt some of the agencies represented on it did not want the Food Requirements Committee to be effective in this way. They still hope that they will presently get the job of handling the food problem of the country.

THE COMBINED FOOD BOARD

The Combined Food Board evolved out of the Anglo-American Food Committee described earlier. It has the same heads and the same paralleling of British and American representatives. Its first executive officials include, for the United States, Leslie A. Wheeler, director of the Office of Foreign Agricultural Relations; Robert B. Schwenger, also of OFAR; and Paul H. Appleby, Under Secretary of Agriculture, who acts as adviser to Secretary Wickard. Each of these appointments is paralleled by a British representative. The functioning of the Combined Food Board is described as follows in a "War Letter for Agriculture" dated August 31, 1942:

> In principle, the entire food resources of the two countries will be deemed to be in a common pool, about which the fullest information will be exchanged between the two Governments. The Board also will collaborate with the food authorities of the British Commonwealth and other United Nations.
>
> One immediate problem facing the Board is the allocation among the United Nations of foods and food materials in relatively short supply. Another immediate problem is the development of ways and means of insuring that the production and distribution of foods is planned in such a way as to cut down the amount of shipping space required for food transport.
>
> Such problems of food management for the United Nations will first be studied by committees, each considering specific questions, the members of which will be the best-qualified persons available. Already established in Washington are committees on agricultural seeds, fats and oils, meat and meat products, spices, and sugar. Soon to be established is a committee to examine over-all problems of international food movement.

The operating relations between the Combined Food Board and the Food Requirements Committee can be stated clearly. The Combined Food Board is to be regarded as the central food council of the United Nations. Its basic function is to bring about the best possible integration of all phases of the food program of the Allies. The Food Requirements Committee is to be regarded as the central food council of the United States. Its basic function is to bring about the best possible integration of all phases of the food program of this country. Its staff will be concerned with the co-ordination of information, and plans and programs of the various agencies represented on the Committee, and shall not itself undertake to do any work that can appropriately be done by the agencies individually.

THE LEND-LEASE ADMINISTRATION

Although the Lend-Lease Act was passed on March 11, 1941, the Office of Lend-Lease Administration was not established until October. Its head is Edward R. Stettinius, Jr. Its position in the operating scheme is described in the following two paragraphs from the *OEM Handbook:*

> The Office of Lend-Lease Administration co-ordinates and expedites the procurement and delivery of supplies and services to those nations whose defense the President has found vital to the defense of the United States. It does not itself buy anything. It arranges for Lend-Lease aid with the representative of eligible countries, on the one hand, and the procuring departments of the United States Government on the other. It allocates the necessary funds from Lend-Lease appropriations to the procuring departments and authorizes transfer to the Lend-Lease countries of the goods and services concerned. The five principal procuring agencies are the War, Navy, Agriculture, and Treasury Departments, and the Maritime Commission. They make the contracts for production and delivery of Lend-Lease supplies and services. The procuring departments report to the Lend-Lease Administration on

progress in fulfilling defense-aid contracts regularly throughout the procurement process until delivery has been completed.

The State Department, the War Production Board, and the Board of Economic Warfare also participate in Lend-Lease decisions affecting their respective spheres of responsibility. The State Department, advised by the Lend-Lease Administration and the Board of Economic Warfare, negotiates the master agreements with Lend-Lease countries setting forth the conditions under which they receive aid. Priorities for Lend-Lease supplies are established by the War Production Board, which also reviews requests for strategic and critical materials. The Board of Economic Warfare is consulted on all nonmilitary matters relating to the economic defense of the United States. The Board of Economic Warfare is also empowered to provide and arrange for the receipt from Lend-Lease countries of reciprocal aid, other than munitions of war.

ORGANIZATION FOR NUTRITION

Aside from the general management of diets exercised within the military organization itself, outlined in Colonel Paul E. Howe's article in this volume, the administration of the nutritional phases of the war program has been assigned to the Office of Defense Health and Welfare Services, with Mr. Paul V. McNutt as director. The assistant director under him responsible for nutrition is Mr. M. L. Wilson, director of Agricultural Extension. In general, this office serves as a center for co-ordination of health and welfare services available through Federal and other agencies, both public and private. It works with and through state and local defense councils and other appropriate state and local agencies. As outlined in detail in Dr. Goodhart's article, its Nutrition Division works with the National Nutrition Advisory Committee already described and state nutrition committees in the conduct of a nationwide campaign for the improvement of nutritional standards. It goes without saying that the home economics extension workers in the states are carrying a heavy part of the burden of the educational program; likewise in rural districts, the home supervisors of the Farm Security Administration.

Affiliated with this national committee are the Food and Nutrition Board and the Committee on Food Habits of the National Research Council, which is housed in the Academy of Science Building at 2101 Constitution Avenue, Washington, D. C. The problems facing the Nutrition Division and its various associated committees are discussed in the articles in this volume by Drs. Mead, Anderson, Bowman, and Goodhart.

The Food and Nutrition Board, under the chairmanship of Dr. Frank G. Boudreau of the Milbank Memorial Fund, has played an important part in many phases of the wartime food program. In the first months of the defense program, when Dr. R. M. Wilder was the Board's chairman, it acted in scientific liaison with the Food and Drug Administration in developing the required standards for fortified and unfortified flour and bread and oleomargarine. It continues, upon request, to make recommendations to the Food and Drug Administration.

The Board's most important early assignment was the development of the table of "Recommended Daily Allowances for Specific Nutrients" now generally accepted as a basis for sound civilian feeding practice and, with proper allowances, for the various diets designated for the military forces. The Board has prepared an analysis of minimum and recommended fat allowances for the guidance of the Committee on Fats of the Combined Food Board and of the Food Requirements Committee. It has committees working on a considerable list of questions referred to it, ordinarily through the National Nutrition Advisory Committee, from the Food Requirements Committee, OPA, WPB, the Quartermaster Corps of the Army, and other agencies already mentioned. It is a semiofficial agency with its expenses financed in part from private foundations.

CONCLUSION

The foregoing account of the evolution of the food administration activities of the United States, and analysis of their present functioning, can scarcely fail to leave in the minds of readers two general impressions: first, that the food and nutrition problems of a nation at war are tremendously complex and involve a wide network of interrelated activities; and second, that at present the lines of authority and responsibility are confused and loosely drawn, this resulting in wasted effort and considerable working at cross purposes.

Both of these impressions are correct; but it is easy to exaggerate their importance. Most of the actual work of carrying on the food program is done by trained and efficient subordinates in the various agencies. Even while their superiors are spending valuable hours and more precious moral energy worrying over jurisdictions and plotting strategies by which their particular agency may secure a neat and well-rounded-out boundary for its efforts, the men in the ranks are getting together at all hours and working out the basic facts and methods of procedure required for a successful handling of the jobs to be done. Small groups of informed workers from the various agencies meet day after day in offices almost anywhere in the Department of Agriculture, the OPA, the Board of Economic Warfare, the WPB, or wherever the occasion may call for a mobilizing of effort. At these sessions the actual jobs are being done.

Still, the food part of the war effort could be much strengthened if over-all relations could be clarified and all national undertakings with respect to food and nutrition could be brought together under one general direction. By the time this volume appears in print, this may have been achieved. But there is an equal chance that the next step will be only another makeshift arrangement, perhaps a little nearer to the final goal.

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For Dr. Black's biography, see his article on Food: War and Postwar.

Food Supplies for Our Civilian Population

By John M. Cassels and Frances L. Hall

THE development of a well-integrated, all-out wartime food program for this country has come slowly, but it is now taking shape as a significant part of the whole war effort. It has come slowly for various reasons. Our food supplies have always been abundant in comparison with those of most other nations. Though many of our people have been undernourished because of inadequate incomes, we had been accustomed to think in terms of agricultural surpluses rather than deficits. We knew that agriculture had the capacity for a further expansion of output. The quantities required for military and lend-lease purposes in 1940 and 1941 were relatively small. They were more than offset by the actual increases in production that took place under the stimulus of rising prices and the favorable weather conditions that happened to prevail. The amount of food available for civilian consumption in those years was greater than we had had before. Facilities and materials for processing, transportation, and distribution were generally adequate to maintain the flow of food products to consumers. Consequently the conscious planning efforts that were made during that period were limited in scope and were directed for the most part to the procurement of particular products in the specific forms that were needed for military or lend-lease use.

Now the situation is completely changed. Food production has been at the highest level ever attained, but the needs of our armed forces and our allies have also increased greatly and are bound to increase further, while on the supply side a falling-off of output will prove extremely difficult to avert. Shortages of labor, machinery, and fertilizer seriously threaten the maintenance of farm production. Shortages of steel, tin, and rubber restrict processing operations and transportation. Prices are frozen and can no longer be used as the means of bringing about desired adjustments. Nor can prices be depended on to bring about an acceptable distribution of the limited supplies that are available.

Unofficial estimates of civilian food consumption in 1943, necessarily very tentative in character, are given in Table 1, together with percentage comparisons based on consumption levels in the five-year period from 1935 to 1939 and in the years 1941 and 1942.

Wartime Food Management

Consciously now we must decide, as a nation, what things we need most and what things we can do without. This means that we must determine the relative importance of food as compared with the alternative goods or services (including military service) that could be provided by certain numbers of men and certain quantities of material resources if they were withdrawn from the production of food. We must determine, similarly, which kinds of foods it is most important to produce and also the uses into which it is most important that they go. Only in this way can we ensure that all our efforts and resources will be devoted as completely and effectively as possible to the attainment of those ends that are most essential and most urgent from the point of view of the Nation as a whole.

Our problem is to work out a balanced program in which the quantities of all goods and services produced are so related to one another that no resources are employed in adding to the output of any one which could be better employed

TABLE 1—UNOFFICIAL ESTIMATES OF CIVILIAN FOOD CONSUMPTION, 1943

Commodity	Total 1943 supply as percentage of 1935–39	Civilian supply 1943 as percentage of total supply[a]	Estimated civilian per capita consumption 1943[a] (In pounds)	Average per capita consumption in 1943[a] as percentage of		
				1935–39	1941	1942
	1	2	3	4	5	6
All meats (dressed wt)	149.5	65.8	132.3	104.8	93.2	96.4
All dairy products (milk equivalent)	115.2	78.4	764.7	94.8	93.3	90.5
Butter	107.3	88.1	14.1	83.9	87.0	84.4
Cheese	151.1	35.6	4.0	71.5	65.6	63.6
Ice cream	121.9	92.8	11.0	115.8	82.7	76.9
Evaporated and condensed milk	176.9	44.8	15.1	89.9	79.5	84.3
Fluid milk and cream	111.7	97.6	377.8	110.4	106.6	104.4
Dried skim milk	152.4	37.5	2.0	105.2	80.0	95.2
Dried whole milk	545.8	0	0	0	0	0
Poultry and eggs:						
Chickens and turkeys (dressed wt)	164.9	89.6	33.7	157.5	141.6	128.1
Eggs	143.0	60.1	35.0	93.3	89.1	88.6
Fish	74.2	61.1	8.0	52.6	59.3	75.5
Fruits:						
Canned fruits and juices	86.1	37.4	12.3	65.8	38.2	51.5
Fresh fruits (farm wt)	100.8	85.4	156.4	103.3	80.3	91.9
Dried fruits	80.1	40.1	3.9	65.0	60.0	56.5
Vegetables:						
Fresh vegetables, except potatoes (farm wt)	[b]	85.4	155.6	[b]	91.2	89.6
Canned vegetables	194.1	50.3	22.7	[b]	69.0	67.2
Potatoes, white (farm wt)	100.2	58.7	123.3	85.1	88.6	87.1
Sweet potatoes (farm wt)	85.5	65.9	20.8	75.6	93.7	90.1
Beans, dry, edible	172.6	34.8	9.0	97.8	91.8	95.7
Total edible fats and oils other than butter	[b]	[b]	30.6	96.2	85.9	91.3
Lard (excluding use in shortening)	184.3	57.2	14.3	130.0	100.0	98.6
Compounds and vegetable cooking fats (shortening)	92.7	79.7	9.0	75.7	84.9	100.0
Margarine (fat content)	126.9	78.0	2.4	104.3	104.3	109.1
Other food products and uses	[b]	[b]	4.9	74.3	58.4	62.8
Sugar	75.4	54.2	61.2	58.8	54.7	70.4
Grains:						
Corn	140.0	3.1	71.8	133.0	117.7	111.5
Oats	127.2	1.4	7.3	105.8	102.8	102.8
Barley	195.3	9.3	25.0	115.2	110.6	104.2
Wheat	149.6	25.7	230.5	103.6	103.0	103.7
Rice	129.6	24.1	5.8	100.0	101.8	101.8
Rye	168.4	53.9	4.0	102.6	105.3	102.6
Beverages:						
Coffee	86.2	63.7	10.0	70.9	59.5	80.6
Tea	72.7	43.0	0.3	42.8	37.5	60.0
Cocoa	83.4	67.7	3.2	72.7	64.0	84.3

Source: 1943 preliminary unofficial estimates of supply and civilian consumption by Office for Agricultural War Relations. Historical consumption data used were estimated by Bureau of Agricultural Economics, U. S. Department of Agriculture.

[a] Supplies available for civilians may be lower than indicated here if the allowances made for contingency reserves prove to be insufficient. Variations in the supply figures may also result from variations in crop yields above or below normal.

[b] Not available.

in increasing the output of any other. And the planning must be done in such a way that continual adjustments can be made as the basic data themselves change. No hard and fast quantitative determinations can be made. Each decision must be subject to reconsideration immediately after it has been made if the circumstances suddenly undergo substantial change. Action must be carried forward decisively on the basis of whatever assumptions appear to be most probable, but a failure of facts to conform to our original assumptions must never find us unprepared, organizationally or psychologically, for a prompt and equally decisive change of plans to suit the altered circumstances.

This ideal is admittedly unattainable. With the quickly improvised and necessarily imperfect administrative machinery currently available for the purpose, we shall inevitably fall far short of it. But a clear appreciation of the fundamental nature of our objective is essential to an understanding of the efforts that are now being made and to the sound development of the entire program as it is pushed on into the more rigorous phases that must follow as the war continues.

CIVILIAN REQUIREMENTS

Total requirements for food at this stage break down into various segments: Army, Navy, Marine Corps, lend-lease shipments, exports to friendly nations, shipments to Territories, and consumption by the civilian population of the continental United States. Among these, the largest and in many ways the most important is the requirement for our own civilian population. This is also the segment for which a genuine management program is most difficult to develop. The importance of maintaining the health, strength, efficiency, and morale of the whole Nation is generally recognized, but the techniques for determining what is necessary to provide for this, and the machinery for carrying out an efficient and equitable program, are still in the early stages of development. This is also the segment most likely to be neglected, because it is not provided for through any centralized purchasing agency, and because of the great difficulty of securing effective representation of the interests of the consuming public in the highest circles of government.

Starting as this country did in 1940 with relatively abundant food supplies for its people, it was natural that the new claims for military and lend-lease purposes should be met practically without question. The importance of the quantity of food used by our own armed forces or shipped to Great Britain was readily conceded to be greater than its importance would be in raising civilian consumption above the level at which it could still be maintained after these diversions were made. As the whole situation has tightened, this assumption has had to be modified. The steps in formal planning not unnaturally begin with a statistical determination of what the civilians would get if the estimated needs of other claimants were first met and the residual supplies were then allocated to the civilians. But this is no longer accepted as a final determination. Each segment of requirements is subject to scrutiny and revision. Secretary of Agriculture Wickard has the responsibility of determining the allocation of food supplies among all categories of use that will be best from the social point of view.

In the case of requirements for export to other countries, the most important of which are lend-lease shipments, the decisions are made in the light of recommendations submitted by the Combined Food Board. They, however, are subject to the same scrutiny as other requests, and the final decision in each case rests with Secretary Wickard. Military requirements estimates also are examined, and explanations of their essentiality have been called for. Some modifications have resulted from these inquiries and comparative analyses, but so far no significant curtailments have been asked for. In the face of a tighter food situation, more serious adjustments in requirements may possibly be necessary. The need for food in Russia is obviously so great, and the limitations the Russians themselves have set on food imports by the use of their available shipping for munitions have been so stringent, that little question can arise about the essentiality rating to be given to their requests. In some instances the specifications may be modified, but in general the Russians are being given what they ask for. In the case of British requests, considerable adjustments have been made, with the effects on American consumers in mind.

CRITERIA OF ESSENTIALITY

What are the criteria by which we can judge the essentiality of civilian needs for varying quantities of different commodities? Should some pattern of past consumption be the basis of our determinations? How far should we be guided by the levels of consumption in other countries? Are there scientific standards of nutritional adequacy that can be applied?

The answer is that none of these can give us a sure and simple guide. All have some bearing on the problem, and each must be given appropriate consideration. Among them, the knowledge obtained from the science of nutrition is by far the most important. The progress that has been made in this science provides an objective basis for the appraisal of food requirements that probably is superior to anything available in other fields of social planning. But taken by itself, even this knowledge is insufficient for our purposes, and although it can be supplemented by relevant information from other sources, we are still left with many areas of indeterminateness.

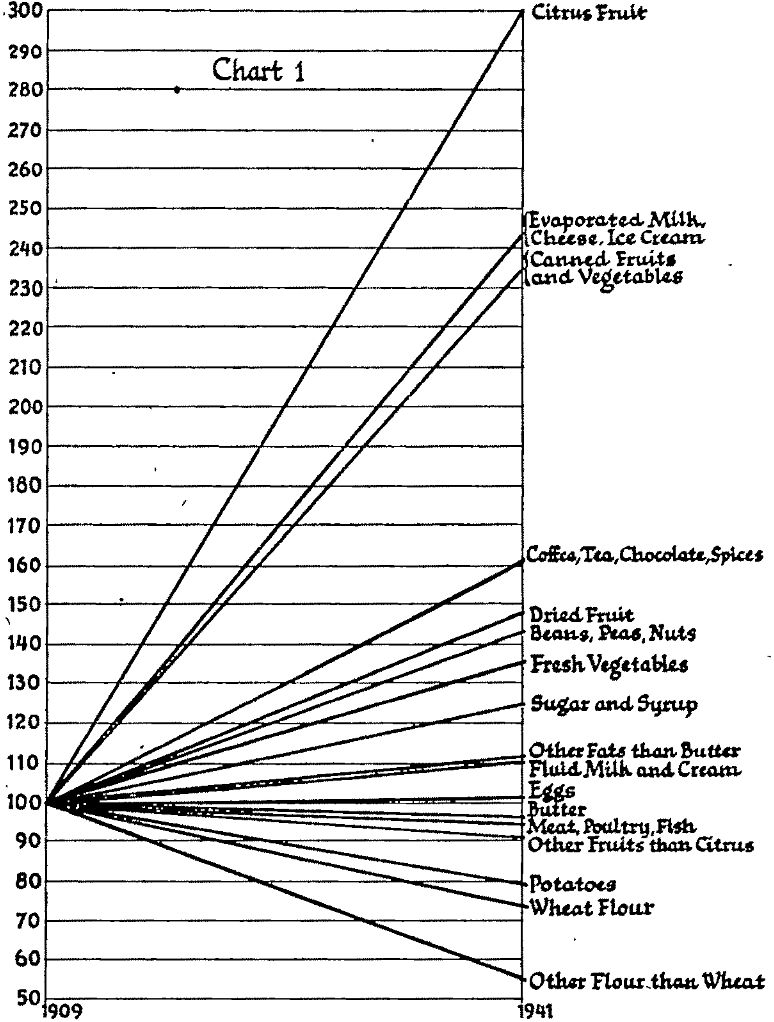
That demand and price relationships have little to contribute as a guide in national wartime food planning needs no argument. When goods are in short supply, they must be distributed through a rationing system based on considerations of need, rather than sold to those who can afford to pay the highest prices for them. The same considerations apply to the allocation of supplies among the various categories of use.

Past consumption is a somewhat better guide, because it is free from the effects of recent increases of purchasing power; but it has to be qualified somewhat, because it reflects the ignorance and inequities as well as the intelligence and good fortune of American consumers in the earlier period.

Past consumption records also indicate the limits beyond which any substantial changes will run into conflict with established consumption habits. They indicate the inertia that must be overcome in making radical readjustments. Where we can go depends in part on where we are when we start and where we have come from. Food habits built up from childhood also carry with them patterns of production and distribution which have been built up to go with them. Production has grown in such a way as to cater to the food habits of the Nation. Facilities for distribution have been worked out to market these commodities.

The longer trends in food consumption shown in Chart 1 also have some guidance value. Although the average annual consumption of food in terms of total weight during the last thirty years has been relatively stable, there have been significant changes within that total. But we must never forget that

Change in Estimated Average Per Capita Consumption of Different Foods in the U.S., 1909-1941. (1909=100)



Source:- O.V. Wells, June 23, 1942 - Address before Amer. Home Econ. Ass'n.

these trend changes have come about slowly. They indicate neither the nature of the changes that would be appropriate in the present circumstances nor the rate at which necessary adjustments can be made in an emergency period.

In the total food program that is being developed, we must also consider civilian requirements to some extent as our "share" of the total United Nations' supply of food. Secretary Wickard and Mr. Brand, members of the Combined Food Board, stated in a press release on August 21, 1942 that "in principle the entire food resources of the United States and the United Kingdom will be deemed to be in a common pool." This means, on the face of it, that the two nations should share equally from the combined

TABLE 2

Nutrient	Unit	National Research Council recommendation	Estimated consumption per capita per day		
			1936–40[a]	1941[a]	1943[b]
		1	2	3	4
Food energy	Calories	2,800	3,220	3,480	3,048
Protein	Grams	66	82	89	84.2
Calcium	Grams	0.9	0.82	.86	.81
Iron	Milligrams	12	14	15	13.28
Vitamin A	International units	4,700	6,000	6,600	5,147.00
Riboflavin	Milligrams	2.3	1.8	1.9	1.82
Thiamine	Milligrams	1.6	1.7	1.9	1.73
Ascorbic acid	Milligrams	70	90	110	94
Niacin	Milligrams	16	15	17	15.7
Fat	Grams	—	—	144	129.2
Carbohydrate	Grams	—	—	456	386.00

[a] Estimated by Bureau of Home Economics, U. S. Department of Agriculture.

[b] Unofficial estimates, Office for Agricultural War Relations, U. S. Department of Agriculture

supplies. In practice, however, the principle must be modified to take account of shipping considerations. Certain foods in short supply, even if they were equally allocated on a per capita basis between the two countries, could not find shipping space and would of necessity have to be consumed in the States. Conversely, there are other foods of high caloric, protein, fat, or vitamin content which are so economical of shipping space that Britain will properly be given much more than an equal per capita share.

Nutritional Standards

Although knowledge of nutritional standards is basic to the planning of an all-out food program on sound and economic lines, it is not easy to apply these standards. One can, it is true, take the dietary allowances that have been set up for men, women, and children of different ages and various occupational classifications, along with population data showing the number of civilians falling into each of these groups, and determine from these the total quantities of nutritive elements required to provide an adequate average per capita consumption. From analyses that have been made of the nutritive content of all the principal kinds of food, together with estimates of the total quantities of these products consumed, one can take the further step and calculate whether or not, on the average for the population as a whole, the standards have been met. This same kind of analysis can also be applied to future supplies, as in Table 2, in which comparisons are made for 1941, 1943, and for the five-year period from 1936 to 1940.

This same type of analysis can serve as a guide in many of the specific adjustments involved in developing a food program that will be most economical of strategic materials and of labor. This is exemplified in connection with canned goods. Both tin and steel are scarce. Even after a preliminary pruning down of civilian requirements had eliminated several canned products from the list, and other products had been cut considerably below the levels of probable market demand, the remaining items totaled up to 221 million cases and would have required 675,000 tons of steel. This amount of steel if freed from food use could be used to produce 25,000 medium tanks or 183 Liberty ships.

Such an analysis must be carried through item by item. To take another example at random, we may ask: Is it more important to have 2.5 million cases of tinned asparagus or to have 250 more medium tanks or 2 more Liberty ships? There is no formula that will enable us to equate asparagus exactly with cargo ships, but an examination of the nutritional information available does tell us that 2.5 million cases of asparagus would furnish about 0.1 per cent of the total quantities of vitamin C and vitamin A needed for consumers in 1943, and that other foods supplying these vitamins will be more than sufficient to provide for an average per capita vitamin consumption higher than is called for in the National Research Council tables.

Other sources for both vitamins which are cheaper in terms of strategic materials and in terms of dollars are cabbage, kale, spinach, sweet potatoes, tomatoes, and cantaloupes. For vitamin C, oranges and grapefruit are substantially cheaper sources. Some of these substitutes are available only for relatively short seasons of the year, but taken all together, they afford year-round supplies of the nutrients with which we are concerned.

How can we plan agricultural production so as to get the greatest nutritional returns for the amount of labor employed? Can we afford to continue production, and if so, how much production, of high labor-input crops such as celery and head lettuce, where the nutritional returns are small? Should labor be devoted to the cultivation and harvesting of bleached celery, rhubarb, and cucumbers, when their place in the diet is due to taste rather than to the relatively unimportant nutritional contributions that they have to make? How far can we shift to soybeans, which yield such high nutritional returns but have hitherto had no established place in the consumption pattern of Americans?

Broadly we can generalize, from what is known of nutritional values and of production costs, that for equivalent expenditures of productive resources, more human food can be obtained from crops that are consumed directly than from animal products, and that more can be obtained from dairy products than from meat products. This is important as a guide to the general direction that should be given to production, but it is subject to many qualifications and practical limitations.

PRODUCTION ADJUSTMENTS

It should be clear that production and consumption adjustments cannot be considered independently of each other. From an independent consideration of requirements, we might decide that it would be advantageous to decrease our supplies of watermelons if in place of them we could have more dried skim milk. The significance of that judgment, however, depends on the extent to which the compensating adjustments on the production side can in fact be made. Can the land and the labor now producing watermelons be directly transferred to the production of milk? How much labor can be released if some other crop is substituted for watermelons? Can any labor so released be transferred to dairy farming? Can the land and the labor be turned to the production of peanuts (for oil) in order that land and labor now producing soybeans (for oil) may be transferred to milk production? Can the labor and the equipment ordinarily employed in transporting and marketing watermelons be used in any way to increase the production of milk?

Is the production of dried skim milk limited by the quantity of fluid milk available or by the processing facilities for drying it? If, by better management or by the allocation of materials for plant expansion, we could dry more skim milk, would the curtailment of watermelon production contribute enough to the increase of dried skim supplies to make it worth while?

In all economic adjustments, the length of the time period within which they are to be brought about is a significant factor. Many changes that might be feasible if we had years in which to make them are now out of the question. We cannot quickly change the numbers we have of dairy cattle, beef animals, horses, or mules. Nor can we count on workers or farm operators to acquire within a period of months the skill in handling unfamiliar production tasks that ordinarily comes from years of experience. Still, revolutionary changes have already been made in our established patterns of production —changes that would have been regarded two years ago as impossible.

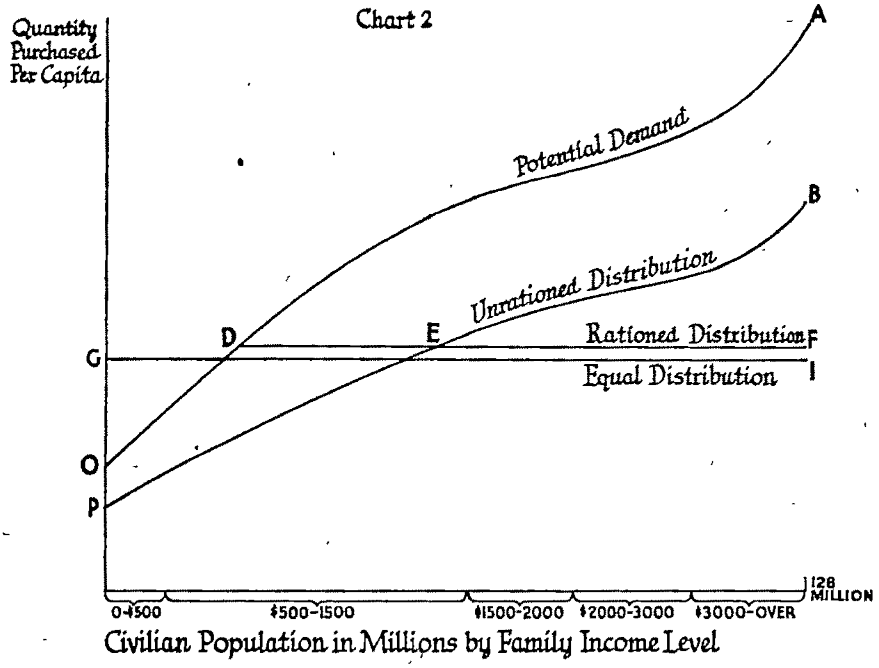
Planning production adjustments is made enormously difficult by uncertainties with regard to weather for planting and harvesting, growing conditions throughout the year, losses from frost or hail or pests or disaster, spoilage in storage, or obstacles to marketing. What assumptions should be made about the yields we may expect to obtain in 1943 or 1944? How far can we afford to discount the possibility that the drought conditions of 1934 or 1936 may recur at this critical time? What stockpiles ought we to provide as a safeguard against contingencies that cannot be foreseen? Beyond what point, in the maintenance of food production or in the building up of reserves, would we be wasting through excessive caution resources that should be put directly into the military effort?

DISTRIBUTION AMONG INCOME GROUPS

When we have to decide consciously as a matter of public policy how much we should limit the food supplies available for civilian consumption in this country in order that the greatest possible amount of our productive resources may be devoted to the war industries, or because we want to send the fullest possible aid in the form of food to our allies, we must be concerned with the question of whether the curtailment involved is to fall on those whose consumption is already low by nutritional standards of adequacy, or whether it can be made to fall on those who are eating more than is required for health and efficiency. The level of consumption in Great Britain since 1939 has been lower than it is in the United States, but thanks to Britain's wartime food planning and the more equitable distribution attained through rationing, the general nutritional status of her people is now probably better than that of a large proportion of the lower-income families in this country. Many Americans can tighten their belts without in any way lessening their health and efficiency. Many others need more food than they are now getting if they are to be in fit physical and mental condition to make their best contribution to the war effort. Food planning cannot, therefore, be limited to production and the allocation of supplies among the major categories of use. It must also include a program of economical and equitable distribution to the civilian population.

This means rationing, and, if carried to its logical conclusion, more than rationing. With prices controlled, the distribution of available supplies among consumers may be left to a haphazard sharing on the "first come first served" principle, or it may be regulated by rationing. One reason for the introduction of rationing is to relieve the pres-

Chart 2



sure on price ceilings, but that is not the reason which is most significant in connection with the present discussion of food problems. Here we are concerned with rationing as a means of distributing food more nearly in relation to need and thereby getting the greatest social return from the resources employed in its production.

In the case of sugar, the need for rationing was early apparent. In the case of meat, the need was recognized by the Food Requirements Committee in September 1942, but administrative difficulties stood in the way of an immediate implementation of the recommendations made. As a step in that direction, we have had a nationwide "share the meat" campaign. This is significant because it was deliberately chosen in preference to the alternative of "meatless days," largely on the ground that the latter type of program would imply the desirability of curtailment by all income groups. In the "share the meat" campaign, stress has been laid on the fact that reduction is expected only from those consuming more than the average available for the whole population. The same reasoning will underlie the rationing programs that will have to be applied to more and more food products in the very near future.

The effects of rationing are illustrated in Chart 2. The number of consumers in different income classes is measured along the horizontal axis. Units of the product are measured along the vertical axis. The quantities that would be bought at prevailing prices, if available, by people at varying income levels are represented by the distance of the line *OA* above the base line. The total quantity demanded is represented by the area under this line. If the total available supply is smaller than the amount demanded, actual purchases may be represented by the line *PB*, the area under it being equal to the supply. Under an accurately adjusted and effectively enforced rationing program, the distribution of the supply would be as indicated by the line *ODF*. Consumption by the higher income groups is thus curtailed by a quantity represented by the area *EBF*. This amount now enters into the consumption of lower income groups as shown by the area *PODE*. It will be observed, however, that those in the very lowest income brackets are still restricted by the limitations of their purchasing power to quantities below the ration level. If the total supply were to be equally distributed, the level would be represented by the line *GI*. This, or any approximation to it, could be brought about only through measures which would in some way supplement the incomes of people whose earnings are too small to enable them to buy as much food as their ration cards allow.

A thoroughgoing food program will have to include appropriate measures to assist consumers in the lowest income groups. In Great Britain, the establishment of thousands of public restaurants and factory canteens, the extension of their school meals program, the provision of cheap milk for those who need it, and other steps of a similar sort have been highly significant in the maintenance of health and morale. In this country, we have embryo programs of the same type in our school lunch and food stamp programs. The social force behind the original introduction of these programs arose from the anomaly of our having on hand embarrassing agricultural surpluses while many people were literally going hungry. Now there is a new force behind them—not the disposal of surpluses, but the sharing of limited supplies on the basis of need and in the interest of national strength and well-being. These programs will have to be put on a new footing and appropriately expanded to suit the present emergency circumstance.

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Wartime Feeding of Industrial Workers

By Robert Goodhart

AN UNDERSTANDING of the economic importance of maintaining the working man and woman in good health developed rapidly during the last years of the first World War. The need for an inexhaustible supply of war materials clearly demonstrated that industrial machines were no more efficient than the human factors involved. In the ensuing years the problem has been extensively studied, particularly in Great Britain and the United States, and considerable progress has been made in combating industrial accidents and disease, decreasing working hours, improving labor-management relationships, and generally improving the environmental conditions of the industrial worker, both within and outside of the plant. However, during peacetime, when conditions were most suitable for scientific study, the nutrition of the worker did not receive the attention it would seem to warrant from its significant position among the factors recognized as determining work output.

IMPORTANCE OF NUTRITION

Nutrition has been shown to play an important part in the health and efficiency of the worker. The ability and the desire of the people to stand the strains imposed upon them in wartime depend greatly upon the quantity and the kind of food available to them. "The anarchic condition of food distribution in the closing years of the last war was one of the principal causes of growing industrial unrest, which finally forced the British Government to establish a wide measure of food control."[1]

Recent years have seen rapid advances in the science of nutrition. The discovery of the essential nature of food factors previously unknown or ill defined has led to an increased comprehension of the prevalence of malnutrition among industrial workers and their families and of the economic waste entailed.[2] With our embarkation on another great war with the resultant increase in working hours, speed-up production, night shifts, use of unskilled and physically inferior workers, rapid increase in women in industry, congestion and delays in transportation, inadequate housing, and possible restrictions in food supplies, and the concomitant increase in strain and stress on the worker, the health of the working man and woman becomes a problem of prime importance to the Nation. Good nutrition is a prerequisite for good health.

The task of ensuring any group of people an adequate diet is comprised of four main problems: (1) supply, (2) distribution, (3) cost of foodstuffs, and (4) education of the group to prepare and serve properly, and eat the foods furnished. A guarantee of nutritional health to the group most certainly cannot be given unless all four problems are energetically attacked and solved. In some countries and with some groups, one or more aspects of the task may be more pressing than others. Thus, at the present time in Great Britain the problems of supply and distribution are paramount, while in the United States, at the date of this writing, education appears to have captured the spotlight. However, both in Great Britain and in the United States, each one of the four problems must receive its due attention if the task of adequately feeding the people is to be accomplished. Although there are quantitative differences between the task of feeding industrial workers in Great Britain and the task in the United States, the job is qualitatively the same. The United States is in a position to profit by British experience.

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[1] *Food Control in Great Britain,* International Labour Office Studies and Reports, Series B (Economic Conditions) No. 35 (1942), Montreal: International Labour Office. This is the sole source for the information on the feeding of industrial workers in Great Britain utilized in this paper.

[2] Committee on Nutrition in Industry, *The Food and Nutrition of Industrial Workers in War Time,* National Research Council reprint and Circular Series No. 110, April 1942, Washington, D. C.

THE BRITISH PROGRAM

In December 1936 the British Government created a Food Department in the Board of Trade to study the food situation in the event of war. This was followed by the Essential Commodities Reserves Act in 1938. The reserves of essential foods accumulated in 1938 and 1939 under this act were transferred to the Ministry of Food, when this office was created shortly after the outbreak of the war. The Minister of Food holds Cabinet rank and controls all food imports and distribution in the United Kingdom. The Minister of Food advises the Minister of Agriculture as to what foods should be produced, and the Minister of Agriculture is responsible for the production of these foods up to the point at which the produce leaves the farm; the Minister of Food is responsible for its distribution. The responsibility for the supply, distribution, and cost of foods, and the nutrition education of the people of the United Kingdom is placed, therefore, squarely upon the Ministry of Food.

Early in the war the Ministry of Food launched a campaign to mobilize women on the "Kitchen Front." Nutrition education is pushed on this front by all available media of propaganda. Food selection and food preparation receive the most emphasis in the Ministry's educational material. The Ministry has also caused Food Advice Centers to be formed in various parts of the country. Officers of the Ministry are sent out to the centers to give advice and collect information about the people's difficulties.

A Scientific Food Committee, appointed in June 1940, has paid particular attention to working out a minimum diet necessary to maintain health and energy under war conditions.

These measures are directed to the nation as a whole, not to any particular groups. The same is true of the British rationing system. The British policy in this matter has been to promote an equitable distribution of food among the civilian population.

In January 1941 it became necessary to reduce the meat ration, and there was a diminution in the supply of cheese and eggs. Several unions then appealed for supplementation of the ration of workers engaged in heavy industries or for long hours. The Food Advisory Committee (on which the General Council of the Trades Union Congress is represented) agreed with the Ministry of Food that it would be a mistake to try to distinguish between different classes of workers for rationing purposes. The chief difficulty in differential rationing according to the type of industry appeared to the Ministry of Food to be the difficulty of classifying workers into heavy and light workers. Obviously, not all individuals in the steel industry, for example, can be classified as heavy workers. Apparently a differential rationing system based on the importance to the war effort of the work done was not considered or else was regarded as undesirable.

As a matter of fact, certain types of

workers do receive extra rations of foods. For example, agricultural workers, underground miners, county roadmen, forestry workers, the Women's Land Army, and several other groups are allowed extra rations of cheese. These allowances, however, are based neither on the heaviness of the work nor on its essential character. They are granted primarily because canteen facilities for supplying these workers with a substantial noon meal are inadequate or cannot be provided because of the nature of the work.

In October 1941 a national scheme for the distribution of milk was put into operation which made provision for a half pint of milk per capita per day for workers engaged in certain processes, e.g., lead processing, where milk is considered a protection. Since April 1942, milk for industrial workers has been granted only on medical grounds.

The extension of communal feeding has been, from the beginning of the war, a basic part of British food policy. The demands of industry and the army for personnel have necessitated a mobilization of women. However, if women are to be called into industry, they must be freed from the task of preparing meals for their families. The establishment of canteens in factories and schools and the expansion of community restaurant facilities serve this purpose. It is also more economical of food, fuel, and labor to prepare food for large numbers of people than for small family groups. The provision of one full meal a day in a factory canteen more effectively serves to insure the worker the extra food he needs than does an extra ration allowance. This meal is "off the ration" and is intended to supplement the ration. The granting of extra rations to industrial workers would not guarantee that they themselves consumed the additional foods and did not share them with their families.

The "British Restaurants"

The communal feeding policy includes the ordinary restaurant, but is aimed at the development of school canteens, factory and pit-head canteens, and communal feeding centers ("British Restaurants"). The standards of many of the cheaper commercial restaurants leave much to be desired, and the cost of meals is often too high for the food served. The "British Restaurants" are therefore an essential component of the scheme to expand communal feeding. There is a great distinction between restaurants designed to furnish good meals at the least cost to the consumer and those run for profit.

British Restaurants are set up on a local basis and at local option. They are expected to pay for all operating expenses but are not intended to show a profit.

The local character of the restaurants has resulted in having some communities far ahead of others in their attempt to provide adequate feeding facilities. They are established only when suitable catering facilities are not otherwise available, in the opinion of the local authorities. The Ministry of Food will finance the construction of premises, cover losses on running expenses, and provide specially trained people to give advice.

In January 1942 the commercial caterers drew from the Minister of Food the assurance that before any more British Restaurants were opened the catering trade would be consulted.

Although the clientele of the British Restaurants is not confined to industrial workers but is drawn from all strata of society, and although these restaurants are often located in the heart of the community, removed from the environs of industrial plants, they are an important factor in the feeding of the workers.

In October 1941 the Ministry of Food provided for the division of all catering establishments, public and private, into three classes. Class A comprises approved caterers serving workers in a number of heavy industries of national importance, including mining, quarrying, docks, iron and steel, and metal extraction. Class B includes all other industrial canteens and private establishments serving wholly or mainly industrial workers. All other caterers fall into Class C.

Increased allowances of food, determined in consultation with the Ministry of Labor, are assured to Classes A and B, while Class C continues to receive the ordinary allowance.

Extra food is allowed to certain recreational clubs for war workers and also to Youth Service Centers, so that they can supply light refreshments for young people who attend after work in industrial plants.

Factory canteens

In the summer of 1940 all employers were urged to set up canteens for their workers, the Ministry of Food agreeing to assist them. In 1940 also, factory inspectors were given the power, by the Ministry of Labour, to compel employers employing more than 250 workers and engaged on government work to establish canteens serving hot meals in their factories.

Some factories with fewer than 250 employees each have combined their resources to form a common canteen. In other instances British Restaurants have been set up to serve such small plants. Other factories have the prepared food brought from a British Restaurant and served in a factory lunch room.

By the end of July 1941 there were canteens selling hot meals at approximately 4,000 factories, including shipbuilding yards, and others were under construction in an additional 750 factories. During the summer of 1941 factory canteens were coming into operation at the rate of about 100 a month.

Summary

In brief, and apart from measures applied to the civilian population as a whole, the method devised by the United Kingdom to supply its industrial workers with the food they require to maintain health and keep up production consists mainly of a supplementation of their food ration in the form of "off the ration" meals supplied in the factories and a variety of communal feeding centers.

The major deficiency in the communal feeding system as it is now practiced in Great Britain appears to be the small number of British Restaurants and the reliance placed upon commercial catering establishments. In commercial restaurants, whether high or low priced, the price of meals is likely to be too high for the food served. A possible answer to this problem might be to contract with commercial caterers to work on a salary or fixed profit basis.

THE PROGRAM OF THE UNITED STATES

The creation of a Nutrition Policy and Planning Committee, with representation from the chief Federal agencies concerned with nutrition, in August 1940, marks the beginning of the present campaign in the United States to improve and maintain the nutritional health of all classes of the population. Then on November 28, 1940, the Council of National Defense, with the approval of the President, designated the Federal Security Administrator as Coordinator of all health, medical, welfare, nutrition, recreation, and other related activities affecting the national defense. The Nutrition Policy and Planning Committee then became the Nutrition Advisory Committee to the Coordinator of Health, Welfare, and Related Defense Activities.

While organization of the Federal nutrition program was in progress, the states, at the instigation of the Land-Grant College Executive Committee, began to create State Nutrition Committees and otherwise to set up their own machinery for the developing of local programs during the fall and winter of 1940–41.

The necessity for closer integration of civilian and military activities relating to health and welfare resulted in a new Executive Order on September 3, 1941, establishing within the Office for Emergency Management of the Executive Office of the President the Office of Defense Health and Welfare Services with the Federal Security Administrator as Director. The importance of food and nutrition in the defense program was indicated by the appointment of the Chairman of the Nutrition Advisory Committee as Assistant Director of Defense Health and Welfare Services in Charge of Nutrition.[3]

The Nutrition Division of the Office of Defense Health and Welfare Services has appointed a representative to serve in each of its twelve regional offices. These representatives function as consultants to the State Nutrition Committees in their regions. They also transmit information from the Washington office to the states and keep the Office of Defense Health and Welfare Services informed of local conditions.

The whole setup of the National Nutrition Program is designed for the widespread dissemination, to all groups of the population, of educational material on the selection, preparation, preservation, and service of foods. Included in its contacts, in addition to the consumer, are the manufacturers of foodstuffs, caterers, advertisers, and, through a Coordinating Committee, other governmental agencies interested in nutrition or the supply of foodstuffs, such as the Department of Agriculture, the Office of Price Administration, and the War Production Board. The Nutrition Division of the Office of Defense Health and Welfare Services has no such regulatory powers as has the British Ministry of Food.

Committee on Nutrition in Industry

The Food and Nutrition Board of the National Research Council created a Committee on Nutrition in Industry early in the spring of 1941, and recommendations on the feeding of industrial workers were included in the *Proceedings of the National Nutrition Conference.*[4] In August 1942 an Advisory Service on Nutrition in Industry was established in the Nutrition Division of the Office of Defense Health and Welfare Services. In addition to the central office staff, this Service is planned to include representatives for each of the twelve regions. The Advisory Service on Nutrition in Industry is an integral part of the National Nutrition Program. Its regional representatives are a component part of the nutrition field staff and will work through the State Nutrition Committees and their subcommittees on Nutrition in Industry. They will also work in close co-operation with the Division of Industrial Hygiene of the United States Public Health Service and with the appropriate regional representatives of the War Production Board. As at present planned, they will function in an advisory capacity.

The activities of the Committee on Nutrition in Industry of the National Research Council had been going on for more than a year previous to the establishment of the Advisory Service. In addition, several large commercial organizations had evolved plans for the nutrition education of industrial workers. The Nutrition Division of the Office of Defense Health and Welfare Services had been very active in reviewing and advising on these plans and in giving them appropriate backing. Several of the states had already set up subcommittees on Nutrition in Industry or similar bodies to tackle the problems within their own borders. Since the spring of 1942 a service to aid in the promotion of nutrition education through labor and labor-management groups has been in existence in the Nutrition Division of the Office of Defense Health and Welfare Services.

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[3] *Proceedings of National Nutrition Conference for Defense, May 26, 27, and 28, 1941,* Washington: U. S. Government Printing Office, 1942.

[4] *Ibid.*

Related considerations

Education has been the theme of all the Federally approved plans for improving the nutrition of the workers which have been put into effect in the United States.

It is hardly necessary to point out that insufficient time has elapsed to make any estimate of the effectiveness of the method adopted by the United States Government to protect the nutritional health of its industrial workers. It seems equally obvious that reliance can be placed solely on such an educational program only where there is an abundance of foodstuffs and an absence of profiteering. Nutrition education is extremely important, but it must be accompanied by assurance that the proper foodstuffs are obtainable. When foods begin to get scarce and prices leap skyward, rationing and price ceilings are essential to insure an equitable distribution of food.

It is not enough to tell the worker what to eat. He must be given the opportunity to buy the foods he needs. Cafeterias, canteens, restaurants, and lunch rooms must be provided where needed. Sufficiently long lunch periods must be granted. Proper housing and transportation facilities are essential. All such needs may be provided for by voluntary agencies co-operating with governmental bodies. But in any event they must be provided for, and an equitable distribution of food assured, if the health and the morale of the country are to be maintained through the war and the postwar period.

The British system of communal feeding might well be tried in many communities in the United States.

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International Aspects of Postwar Food and Agriculture

By F. L. McDougall

FOOD supply is an issue of great international importance in the war, it must be the central factor in postwar relief, and it may be given first place in the plans of the United Nations to establish a better world.

Since food is the source of human energy, it is the most important of the munitions of war. The effect of food shortages on German morale in World War I is well known. The Nazis determined to guard against any repetition of military failure through lack of food. They adapted German agriculture to war requirements and also accumulated large stocks of bread grains and of fats. Three successive poor harvests, together with a drain of manpower to the armies and to war industries, have now faced Germany and German-occupied Europe with the prospect of a repetition of the food story of 1917–18.

The immense bulk of food required to sustain armies and civilian populations suggests that international control of stocks of cereals and fats might be used by the future World Authority to form an important part of the measures taken to guard against the outbreak of war.

When the war ends, the relief organization of the United Nations will have to meet the urgent needs of practically the whole of the urban population of continental Europe and of the peasants in occupied Russia, Poland, and Greece. These millions will have been keeping alive on diets deficient in the calories needed for energy and still more lacking in proteins, minerals, and vitamins. The food situation in those parts of eastern Asia overrun by the Japanese cannot be estimated, since little news comes out of those areas; but a decrease in food production and breakdowns in distribution must be anticipated.

If the peoples of the war-racked countries are to be rapidly restored to health and vigor, the food supplied must include proteins and other protective foods, especially those rich in calcium. Recent progress in food drying now enables us to preserve meat, milk, butter, eggs, and vegetables in concentrated forms which can be held for considerable periods without refrigeration. It seems unlikely that relief stocks of such foods can be accumulated in sufficient quantities unless the peoples of countries not seriously affected by food shortages are prepared to accept the rationing of such forms of food as can readily be processed and stored.

The exigencies of war and of the relief period will in the next few years render almost all men everywhere in the world highly food-conscious. This will be no new experience for the bulk of the world's population, whose daily bread has always been a problem of some anxiety, but it will be one of some novelty to those who determine the policies of the more advanced nations, and in so doing consciously or unconsciously fix the pattern of the world economic system.

League and ILO Studies

Psychological reasons may therefore lead us to anticipate that in the United Nations plans for world reconstruction, action to secure better nutrition and improvements in food production and distribution will be accorded a high priority. Should this prove to be the case, we shall be able to take advantage of valuable preparatory work accomplished at Geneva between 1935 and 1939. At the League Assembly of 1935 Mr. S. M.

Bruce, the leader of the Australian delegation, drew attention to the newer knowledge of nutrition and proposed that the Economic and Health Organizations of the League should jointly investigate and report upon the implications of sound nutritional policies to health, to agriculture, and to economic affairs. Mr. Bruce said:

> Is it not possible that our newly acquired knowledge of the importance of nutrition to public health might open the way to a solution of the world's agricultural problem? Is it not the case that, today, most countries are facing a most paradoxical situation? Ministers of Agriculture and their advisers are wrestling with problems of apparent overproduction. Increased yields are being regretted and abundance is . . . often officially deplored. At the same time, Ministers of Health and their official and medical advisers are realizing, more and more, that public health demands an increased consumption of many of the very products about which the Departments of Agriculture are so unhappy.
>
> Millions of pounds are being spent annually in subsidies, bonuses and other forms of assistance to agriculture. Side by side with that expenditure millions of pounds are being devoted to combating disease. Is it not possible to marry health and agriculture and, by so doing, make a great step in the improvement of national health and, at the same time, an appreciable contribution to the solution of the agricultural problem?

The Assembly unanimously accepted this proposal and the League Council established two committees: one of eminent physiologists who agreed upon what constitutes an optimum diet, and a mixed committee of scientists, economists, agriculturalists, and officials, who reported on the relationship of nutrition to health, agriculture, and economic problems. The International Labor Organization studied the nutrition problem from the standpoint of industrial workers and produced valuable reports.

RESULTING CONCLUSIONS

The conclusions reached as a result of the work of both the League and the ILO between 1935 and 1939 can be summarized as follows:

1. The provision of food adequate in quantity and quality will have a more profound effect upon national health than any other single reform.

This conclusion was based on a study of mortality and morbidity statistics and on comparisons between countries, and between districts within countries, where marked differences in the adequacy of nutrition were known to prevail.

In the Final Report of the Mixed Committee of the League of Nations on Nutrition it was stated that in most countries of Western civilization "the general mortality rates in poor districts are 50 per cent higher than in the wealthier ones,/while tuberculosis mortality is almost four times as high in the former as in the latter, and the corresponding proportion of infantile mortality is as 2 to 1."

This statement is borne out by the Registrar-General's returns for the United Kingdom. Since in all parts of Great Britain there are very nearly equal conditions in regard to purity of water supply, general district sanitation, and the segregation of infectious diseases, the two principal factors remaining which could account for such marked differences as those cited are nutrition and housing. When the known influence of malnutrition upon health is taken into account, the food factor may justly be regarded as of major significance to public health.

2. Nutritional science can lay down optimum standards for any given country.

This conclusion must be qualified by the proviso that nutritional science is young and is continually advancing. Doctors, physiologists, and biochemists can today prescribe a diet for any country which will secure abundant health, but the progress of science may prove that by a larger intake of certain protective food factors, resistance to disease can be heightened and the onset of senility postponed to a greater degree than is as yet certainly known. The optimum standard of 1950 is likely to be more liberal than that of 1943.

3. The application of science to agriculture would enable us to provide all the food required.

Those who know what has been accomplished by biological and other technical improvements in agricultural practices will agree that this is the case.

4. The adoption of sound nutritional standards on a worldwide basis would have a highly favorable effect on world agriculture and on world trade.

5. The accomplishment of these aims requires the international co-ordination of national action, and also international assistance to many countries.

The validity of the fourth and fifth conclusions will not be challenged; their significance will be discussed later.

NATIONAL POSTWAR SITUATION

If the United Nations decide to make freedom from want of food the first step towards the attainment of the President's third freedom—freedom from want—this will require national action in every country and international action to assist countries lacking technical knowledge and financial means to secure improvements in food production. It has therefore been proposed that the more economically advanced United Nations should pledge themselves, first to institute policies designed to ensure that the foods required for diets adequate for health are within the purchasing power of their own citizens, and second to provide technical and financial aid to enable the less advanced nations to progress towards the accomplishment of this objective.

The countries which would have the least difficulty in carrying out the first part of this pledge would be those which normally export large quantities of a variety of foodstuffs. Such countries include New Zealand—whose population is probably the best fed in the world and where the expectation of life is longer and infantile mortality lower than anywhere else in the world—Canada, Australia, Denmark, and the Netherlands. Argentine productivity is ample to secure a place in this class, but there a more equitable distribution of food may present considerable problems.

The United States presents special problems. The increased food production of 1942 would probably provide sufficient food in quantity and variety to make diets adequate for health available for her 130,000,000 inhabitants, but serious problems of malnutrition affect most of the southern states.

In western Europe the attainment of this nutritional goal would require a considerable reorientation of agriculture to produce more milk, other dairy products, vegetables, and fruit, and this would mean that an increased proportion of the needed supplies of cereals and sugar would be imported. This in turn would require markets for the sale of European manufactured products. This question of markets for exports must be the main factor in enabling countries such as the United Kingdom and Belgium to provide fully adequate diets for all their citizens. Freedom from want of food in Italy, Spain, and Portugal would require great improvements in agriculture and probably some measure of international assistance. Italy, for instance, would need to substitute better dairying for Mussolini's "Battle of the Wheat."

INTERNATIONAL AID REQUIRED

The pledge to afford aid to the less advanced countries would require to be applied over the larger part of the world. The present levels of agricultural efficiency in Central America and northern South America, in eastern Europe, in the Near East and the Middle East, and over most of Africa are so low that the attainment of proper standards of nutrition can be progressively attained only if international action is taken to provide for agricultural credits and if the granting of such credits is made dependent on the acceptance of sound technical advice.

In parts of eastern Europe and more markedly in India and China, improvements in agricultural production, no matter how striking, cannot meet the situation. In Poland and in the Danube Basin serious agricultural unemployment must be met by draining off a considerable proportion of farm families into industry. The population problems of India and China are far more difficult. There is urgent need for the most effective use of every acre of land that can be brought under cultivation; but without a great development of industry, social conditions will remain deplorable. The population of India is said to have increased by 50,000,000 in the last fifteen years. Such figures are staggering, and it must be hoped that the growth of industries under good social conditions of employment will result in changes in marriage and family customs.

The industrialization of China and India would provide markets for the essentially agricultural countries of Indonesia and southeastern Asia, which in turn would purchase consumption goods from their northern and western neighbors. Mr. Colin Clark in his *Economics of 1960* has indeed somewhat audaciously suggested that the industrialization of Russia, China, and India will cause so great a demand for food and raw materials as to bring about a marked change in the terms of trade in favor of the agricultural exporting countries.

The type of food policies required in the tropical colonies varies considerably. Where monoculture of sugar, bananas, coffee, or the like predominates, better diets will depend on a combination of more food production and methods of keeping the price of imported foods within the purchasing power of the poorer classes. In Central Africa, where potential agricultural resources should be adequate for the present population, the problem is mainly one of education and adjustment of tribal customs to the need of more systematic methods of food production.

RELATION OF FOOD PLANS TO OTHER PLANS

The foregoing survey has indicated that if rapid progress is to be made towards a wide realization of the simplest form of freedom from want, vigorous international action will be required, and that this must take a variety of forms, including considerable financial aid to the less advanced countries. At this point it may be well to consider how far this need will fit into other plans for world reconstruction.

There is general agreement that in order to secure their own economic prosperity and to enable the world to enjoy political security, the United States and the United Kingdom, acting in agreement with the other United Nations, must so adjust monetary and financial mechanisms and commercial policies as to secure an expanding world economy. For this purpose international financial institutions are being proposed, charged with the duty, inter alia, of assisting the development of the more backward areas. Many schemes of large-scale development are being discussed, including the establishment of projects such as the Tennessee Valley Authority in other river valleys, for instance, the Danube, the Yangtze, and the Euphrates. There will be need for many such projects, but they will require large investment, and a considerable number of years must elapse before the electrical power installations and the irrigation schemes can bring about increased production.

The sums required from international sources to enable countries to begin the remodeling of their agriculture, while considerable, will be relatively small when contrasted with the aforementioned projects. Agricultural credits, if made available on the condition that sound technical advice is also secured, should begin to yield returns in larger crops, improved nutrition, and increased trade within one or two years. Agricultural credits may therefore prove to be one of the most important ways of commencing action by the United Nations to secure an expanding volume of world production and world trade.

When to this consideration is added the factor of social welfare, the case for a high priority for international action about food and agriculture becomes overwhelmingly strong. Not fewer than 60 per cent of the gainfully employed persons in the world are engaged in agricultural pursuits. Therefore, on the basis of numbers, the social condition of the peasants, sharecroppers, and other farm workers is the outstanding social problem of the world. Improved efficiency in agriculture and a reduction of agrarian protectionism are also essential if the industrial workers are to secure adequate food at prices within their purchasing power or without imposing too heavy a burden upon national budgets through food subsidies.

MECHANISMS REQUIRED

The mechanisms required by the United Nations to give effect to soundly based policies on food and agriculture will need to be carefully studied. The United Nations Organization for Food and Agriculture will need to be closely associated with the Relief and Rehabilitation Administration. This will be essential in order that the actions of the Relief Administration in the first stages of agricultural rehabilitation shall not run counter to and thus prejudice the longer-term plans. There will need to be national organizations linked to the United Nations Organization, and it should be part of the reconstruction plans of the United Nations to promote the establishment of such national units. The United Nations Organization will need to work in the closest harmony with a conjectured International Health Authority, and with any authority established for the development of backward areas.

Speeches made by leading members of the United States administration and by ministers of the United Kingdom have indicated that both governments look forward to the creation of a World Authority for the preservation of peace and to secure full employment with rising standards of living in the postwar world. The economic side of this authority will need to consist of a series of closely linked bodies dealing with finance, commercial policy, transport, health, social questions, and raw materials, as well as with food and agriculture.

The Food and Agriculture Organization will have to co-operate with local agricultural administrations and with health services. Where such do not exist, it will be necessary to arrange for their creation, perhaps in some cases on a regional basis. The organization will probably perform certain essential services such as the collection and compilation of agricultural statistics and their economic interpretation. It is to be hoped that vigorous efforts will be made to induce the nations to pay more attention to food consumption statistics and thus to record the progress of the advance towards better nutrition. It may prove possible to organize a world service about the sciences affecting agriculture.

Close liaison should be maintained with the international and national health services. It may well be that the recommendation of the League Nutrition Committee for the establishment of National Nutrition Committees on which both the health and agricultural authorities will serve will be revived. Between 1937 and 1939 no fewer than twenty-five governments acted on this recommendation, but the war abruptly terminated the activities of most of the committees established.

In addition to these general services to all countries, the Food and Agriculture Organization will have special responsibilities towards the less advanced countries. To discharge these duties it will not be enough for arrangements to be made for the provision of agricultural credits. It will be equally necessary to afford technical guidance and help. For this purpose a corps of agricultural technologists may be recruited, drawn from those countries with advanced methods of agriculture and available to be sent to any part of the world to assist in improving agricultural methods, securing better land tenure systems, bringing about more effective marketing, or promoting agricultural education.

The experience of the United States Farm Security Administration has shown that much can be accomplished in helping the underequipped, small farmer to become a more efficient productive unit through the combination of small loans and sound technical advice. It might well become one of the major purposes of the international organization to secure similar action in many countries and to support regional and national endeavors with financial backing and experienced assistance.

DIFFICULTIES

There will be many difficulties to overcome before freedom from want of food is a realized ideal. These include the innate conservatism of farmers and peasants, the opposition of vested interests, and, perhaps most formidable of all, the unawareness of certain types of politicians and bureaucrats of the need for change. Nevertheless, over the greater part of the world this purpose can be accomplished. The Mixed Committee of the League concluded its recommendations with a sentence well worth recollecting: "The malnutrition which exists in all countries is at once a challenge and an opportunity; a challenge to men's consciences and an opportunity to eradicate a social evil by methods which will increase economic prosperity."

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Methods of Controlling Food Consumption[1]

By C. ARNOLD ANDERSON and MARY JEAN BOWMAN

THE practices and values associated with the production, processing, distribution, preparation, and eating of food are an integral part of our culture. Any system of control designed to modify food consumption must be equally complex and pervasive. Controls must be directed toward the consumers and toward all the agents engaged in making food available; they must be applied at many stages in the sequence from raw materials to ultimate consumption.

OPPORTUNITY TO CHANGE FOOD HABITS

Circumstances are opportune today for developing a long-run food policy as well as for conducting a variety of experiments in consumption control. Food customs and all the technological and economic practices and organizations relating to food have been changing rapidly in recent generations. The fact that we are passing through a political, economic, and cultural crisis means that customs and social controls are in flux. Those who plan or direct what may be called a food policy have a surprisingly free hand in utilizing the readiness of our people for change. Though the opportunity for experiment and initiation of new policies can be jeopardized by a postwar reaction (on the ground that these policies were "put over" while public attention was concentrated upon the war), nevertheless, to refrain from experimenting or launching new policies during the war would be poor strategy.

Many factors in the present situation are favorable to a successful food consumption program. The kinds of dietary changes which nutritional authorities support are for the most part projections of trends that have been under way for some time, and have especially characterized the practices of the more educated part of the population. The rising level of education and the expansion of adult education lend support to a program to improve diets. So also does the existing variability in the American menu pattern. The rate of diffusion of culture traits among the various groups of the population is still increasing. The resources of technology in food production, processing, and distribution have not been exhausted. Favorable attitudes toward science and change in general will facilitate further improvements.

Among the obstacles, we should include the still strongly persisting religious and ethnic food patterns, tremendous differences in income and education, the reduced production for home use associated with increased commercialization of farming, the strength of vested groups astride key points in the producing and distributing of foods, the commercially fostered taste for sugar, the prestige value of refined foods, the diminished interest in cookery, and the individual family mode of consuming food.

Taking into consideration the nature of the factors determining food usages, it seems to us evident that any program designed to revolutionize consumption must fail. On the other hand, flexibility exists on many fronts, giving opportunities to modify consumer practices in many ways.

Methods of controlling consumption may be roughly placed under three general heads: direct control through education and persuasion, alteration of the buying power and market position of different consumer groups, and indirect control through control of supplies. The various forms of control here discussed are related to these heads.

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[1] Completed September 1, 1942.

EDUCATION

Detailed discussion of education as a form of control of consumption is reserved for a separate article. A few general observations, however, are needed at this point. In a democratic society the provision and selection of good diets must in the long run rest upon the knowledge of the individual consumer and his desire for nutritious foods, accompanied by the purchasing power to obtain them. We assume that public opinion in this country will continue to insist upon a nonrigid economic system and an opportunity for consumer choice. To the extent that this opinion remains dominant, most of the other policies will be administered with the specific purpose of contributing to the education of the consumer and permitting him to choose in the light of adequate nutritional knowledge.

Still, some measure of governmental control is likely to be fused with education, and assumptions must be made as to the degree of government control which is acceptable, before one can evaluate the relative effectiveness or desirability of any form of education as compared with other methods of controlling food consumption. Thus the guaranteeing of a minimum nutritional level is becoming a part of our ideology of public welfare, as the demand for a certain minimum of schooling did at an earlier date; but the question still remains as to the degree of public insistence upon using the police power for this purpose.

Finally, we cannot escape the fact that up to the present time in our society, consumer interests have been residual, while producer interests have had a more effectively enforced claim upon public power and public funds. Educational methods will be modified by these pressures in less degree than most other forms of control.

CHANGING THE BUYING POWER

Good nutrition for Americans is a question not only of what food is consumed, but of how that food is divided among the population. Any policies which alter the distribution of incomes clearly reallocate the opportunities to buy nutritious meals. Income distribution may be altered in favor of low income groups in many ways, the most obvious of which are progressive taxes and government payments for relief. The number of dollars a family has to spend on food will depend indirectly upon the costs of the other things in the budget. Anything which reduces the prices of commonly consumed nonfood items therefore increases the number of dollars a family may spend on food. A number of public programs already in existence do lower some of these costs by providing consumer goods such as parks and schools free. The slowly evolving plans for socialized medicine point in the same direction. None of these policies for redistributing income have been primarily directed toward the food problem as such.

Policies intended to approach directly the problem of increasing the availability of food to particular consumer groups are of four main kinds: (1) classified markets and price systems, (2) the provision of supplementary foods, (3) food rationing, and (4) the setting of price ceilings on foods.

Classified markets

Classified markets are not new. Commodity differentiation is to a considerable extent a method of splitting markets, and territorial divisions have been numerous in oligopoly agreements. Such policies developed in the interests of private profit-seekers have been much decried. Yet more recently our government has supported some marketing plans which similarly divide consumers, though with a very different purpose. The program for distribution of low-cost milk is of this type, in that milk is made available to low-income families under especially favorable conditions. The response which this plan has elicited, despite its novelty and imperfections, indicates a high degree of demand elasticity for some of the protective foods. Programs of this kind do offer an effective means of improving nutrition, though they are easily perverted by vested interest groups. They can be carried out at very little if any cost to the government in cases where the demand of low-income families for the product is highly elastic.

Supplementary diets

Diets have been supplemented directly in a number of ways, among which we may distinguish communal feeding projects and provision of supplementary foods for consumption in the home. The food stamp plan and the direct distribution of foods by relief agencies are of the second type. The stamp plan is in fact a hybrid scheme that has much in common with classified markets. Gallup polls indicate that this plan is receiving overwhelming public support. Communal feeding has been undertaken in serving school lunches, in factory canteens, and in emergency feeding in bombed areas in Europe. Linking hungry children with farm surpluses is good strategy to get action. Moreover, these programs offer an opportunity for what has been called the concentric-circle tactic of raising nutritional levels: we are now providing superior diets to the military forces and to many school children, plans are developing for free or cheap canteen service in armament plants, and it is proposed to include in the stamp plan rejected draftees and even the families of draftees whose incomes are reduced by the loss of a wage earner. Long-run possibilities in the development of such programs are tremendous.

Supplementary feeding programs have a significance beyond the immediate correction of deficient dietary conditions. Food provided in these ways contributes directly to changes in food choices and nutritional knowledge. Such programs also advance the transition from philanthropy to health as the basis for providing nutritive foods to particular consumer groups. In general, they supply the foods most needed; these are also the foods consumption of which has been increasing in recent generations.

Consumer rationing

Rationing of consumers, discussed in detail in another article, differs from the preceding approaches in that it is a way of equalizing food opportunities directly instead of through improved opportunities for previously disadvantaged groups. Rationing schemes—primarily of use in wartime—may be classified roughly into three types, all of which may be combined in one broad program. A consumer may be given a ration card allowing him to purchase certain quantities of a specified product. He may be given a card permitting him to spend a certain amount of money on a product (as, value rationing of meat). Or he may be rationed on a point system, which permits the buying of any of a list of foods, each of which carries a certain point rating, until he has used his full point quota.

The second procedure prevents the inequity in meat buying which would result if people were rationed by pounds (enabling high income famlies to get the cuts with a high percentage of edible meat). The third type is especially important in two ways: it makes possible inclusion in a rationing system of products too rare to be rationed by themselves, and therefore prevents high income groups from supplementing their diets through these otherwise unrationed scarce goods; and it gives an opportunity for a maximum feasible freedom of choice in an otherwise strait-laced dietary.

Different consumer groups may be treated unequally under any of these schemes. Thus in Germany there is a sliding scale: soldiers, armament workers, farmers, other heavy workers, pregnant women, children, and others. England has a less complex stratification of rations, but something of the same end is attained by expanded school lunches and factory canteens. England also has a special scheme of flexible rations of perishable commodities the supplies of which are irregular; this permits the allowance of certain quantity quotas to favored groups, with unrestricted sales when these first claimants have been supplied.

In the absence of a card rationing system, most products are divided by "price rationing," which is the normal situation. There is frequently an illusion that card rationing actually brings about equality in food consumption; but this is true only if everyone is able to buy his full ration. Such a situation will occur only if food prices are low enough and incomes are high enough. There is a minimum wage level in relation to prices, below which these requirements will not be realized.

Price ceilings

The setting of general price ceilings is essentially a wartime anti-inflation measure; but if certain commodities are selected as the only ones on which maximum prices are set, results are somewhat different. Price ceilings on selected food products can protect low-income families in this particular sector of buying. Price ceilings and rationing are often used together. When inflationary pressures are strong, enforcement of price ceilings is made easier by rationing. At the same time, the goals sought in rationing are made more attainable when the prices of the rationed foods are low enough so that the mass of the people can buy their quotas.

. . . . .

Until the time when nutritional knowledge is more widespread and preferences are more in line with nutritional adequacy, any of these methods which may be used directly to further the consumption of protective foods will more quickly improve diets than programs of supplementing low money incomes in cash, grocery orders, or unrestricted food stamps.

CONTROLLING SUPPLIES

The control of what appears on the market (and of what the family produces for home use) is also one way of modifying food consumption. Production control programs in agriculture have thus far mainly reflected pressures from farm groups for higher incomes, but they can also be used in the interests of food consumers by developing incentives to expand production and to divert resources from less-needed to more-needed products. The devices that may be used to control food production and distribution are too numerous and varied for detailed analysis in this article. A simple listing of them will suffice for present purposes.

Price incentives

Among the most powerful of the controls over production are offers of price incentives. These may take the form of guarantees to raise or maintain prices. A number of techniques have been developed to implement these guarantees —some restrictive, some expansive. The principal expansive ones are export subsidies and government purchase programs. A second method is government buying at differential prices based on the costs of production of different producers. This is mainly a war device, but is sometimes used under other circumstances; the program for the purchase of sugar in the last war is a well-known instance. Third is the granting of exemptions from price ceilings for agricultural products—again primarily a war measure.

While high price incentives are powerful instruments for encouraging expanded outputs, they are probably ill adapted to a long-run nutrition program except as they may be combined with government surplus disposal programs for nutritionally selected foods. Few people would question the tendency for such programs to revert to tools exploited restrictively, and primarily for the advantage of producer groups, with little heed to the basic problems of efficient resource allocation and the general public welfare. It would take unusual skill to avoid such perversions.

Subsidies

An even more direct form of control of supplies takes the form of subsidies at any stage in the production or distribution of foods. Cash payments or tax exemptions can be granted for planting particular crops to meet widespread nutritional deficiencies; and cheap credit can be used in the same way. The credit approach is particularly appropriate for encouraging small-scale farms when they are especially adapted to the production of some of the protective foods. The conflict between providing price incentives to producers and making essential foods available to consumers at low cost may be resolved in some cases by the use of subsidies applied at a suitable point between the farmer and the consumer. The British plan for controlling bread prices and supplies, adopted in the last war and revived in this one, is a clear example. Subsidies offer long-run possibilities for encouraging increased production and consumption of protective foods. Here also there are dangers of misuse in the interests of vested groups, but a program of subsidies is easily geared to selective expansion.

Access to markets

The granting and facilitating or the withholding of access to markets provides another group of techniques for controlling supplies. Transportation priorities may be granted producers of certain foods, as in the case of some fruits and vegetables. Access to terminal facilities for all shippers of foods, as of other products, may be more nearly achieved by either antitrust prosecutions or the creation of public utilities in these services. Government-inspected quality grading and enforcement of adherence to contracts protect both buyers and sellers, especially in the marketing of perishables. The recent marketing agreements fostered by the Department of Agriculture illustrate a type of policy which can be directed either to encourage or to discourage free access to markets.

Since access to markets involves the buying of things essential to production as well as the selling of the product, wartime priorities on agricultural machinery or fertilizers, and draft exemptions for farm labor, may be used selectively to control agricultural outputs, and analogous priority controls may be imposed on processors and distributors. Rigorous enforcement of these controls is easier in an importing country, such as Britain or Germany, because there is a bottleneck at which government may step in.

Technology

The reduction of costs and the improvement of diets have rested in large measure on technological progress—especially in processing, transportation, and storage, but also in primary production. Such advance is further stimulated in a war. The Civil War, for example, greatly speeded improved technology in the canning of vegetables. Contributions from technology may be increased by pushing research and by policies designed to assure more widespread use of the results. Research in these spheres is so important that it might be wise to consider diverting to this end a large part of the funds otherwise used for subsidies. A major problem here is the guaranteeing of free investigation and publication of findings which conflict with the interests of powerful private groups or the stated policies of public agencies.

The operation of the patent system is a critical point in the food situation as in other sectors of economic activity, and the problems involved will become more important with increasing technical elaboration. There is merit in the proposal to treat patents as franchises; this would involve making their use available at a reasonable fee without discrimination among the users. The food industries are so peculiarly "affected with a public interest" that they seem to offer an important testing ground for patent reform.

Technological advances that contribute to the improvement of nutrition are peculiarly well adapted to the American emphasis upon invention. They are therefore relatively easy to encourage, in that they involve primarily the acceleration of changes already under way.

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Whatever form they may take, policies directed toward controlling food supplies can be really significant in their effects on the nutrition of the American population only if they are formulated in long-run terms. Incentives and guarantees should therefore encompass more than a war period. If administrators are aware of the usual tendency to react directly after a war against the policies introduced during the war, provision will be made to establish commitments which will carry many parts of the program beyond this temporary revulsion.

BASIC PROBLEMS

In taking a broad view of a complex program directed to influence food consumption, a number of basic problems appear. Is the program one which will bring acceptance and co-operation from consumers? Will trade groups co-operate? Is the division of responsibility between central and local agencies satisfactory? Are there dangers that these food controls may be perverted by government officials into political weapons? Is the program consistent with democratic processes and ideals?

Consumer acceptance and co-operation depend on what we try to do to food habits and how we try to do it. Administrators are called upon to study consumption patterns in order to determine where they may be most readily altered in the direction of improved nutrition. They are called upon to use insight and discrimination in the nature of the appeals which are made. The strategy of timing may often prove a key factor in the success with which consumers are enlisted.

Publicly minded administrators have long faced the problem of securing the advice and co-operation of businessmen from farmer to retailer, while at the same time formulating programs genuinely in the public interest. In a war situation the enlistment of these groups is essential if the job is to be done quickly and efficiently and the difficulty of policing is to be minimized. British experience indicates that employment of their members in government itself is most successful if initial assignments are of a technical advisory nature and only after considerable public service are selected individuals assigned to important policy-making posts.

Central planning is the quickest way to accomplish many changes. It is therefore indispensable in an emergency. The importance of encouraging local initiative and relying on local responsibility is not confined; however, to the long-run programs of normal periods. Great Britain learned this well in the last war, and the experience of that time has brought the practice of the present. The British Food Ministry has shared responsibility for administering its programs of food distribution and rationing with its local offices. Reports of success are most encouraging.

In totalitarian Germany, food is frankly used as a political weapon to penalize minority groups and to reward friends of the government. In a democratic society it would probably be difficult to carry out such a program even if it were considered desirable in an emergency to do so. Avoidance of political misuse of food policies depends in part on what aspects of the policies are selected for long-run emphasis, and in part on the quality of public servants.

It is easy to be carried away with visions of what might be accomplished by a little planning here and a little planning there, but those who become worshipers of planning may lose sight of the fundamental values in our democracy. It is important to plan programs which will minimize planning. It is important to plan programs which will democratize opportunities and so far as possible avoid the social and economic stratification of the population. Few Americans share the academicians' refined philosophy of free choice, but most Americans appreciate and value their freedoms.

SUMMARY

The foregoing analysis may be summarized by listing seven types of control of change in consumption that may be employed:

1. Consumer education: Three types of educational programs have most promise: supplementary feeding plans, other forms of concrete demonstration of better nutrition (including the encouragement of gardening), and consultation services made available in appropriate situations.

2. Making foods more available to selected groups of consumers: Communal feeding plans, classified markets, and surplus disposal plans are the most important techniques for a long-run program.

3. Policies for redistributing income: We take it for granted that broad programs such as vocational education, unemployment relief, and old-age assistance will be continued. The emphasis here is on tax revision in favor of low income groups, and government participation in the selective expansion of some services to consumers.

4. Improving the structure of the market: This would include a very active antitrust program on all fronts, the removal of legally constructed barriers to trade, and the judicious extension of the public-utility approach in the control of certain aspects of food distribution and of the exploitation of patent rights.

5. Increased use and enforcement of quality requirements: This would include a strengthening of the enforcement of the Food and Drugs Act, the introduction of informative labeling specifying the nutrients in foods offered for sale, and a discriminating application of legally required enrichment of widely consumed staples.

6. An intensification of research: This would include research in nutrition, food technology, and food customs,

accompanied by new programs to reduce the lag between the time of discovery and practical application. Some of the policies involved would be increased subsidies to research, and the establishment of agencies for processors, distributors, and consumers corresponding to the Agricultural Extension Service and the Farm Security Administration.

7. Provision of economic incentives: In this way we can stimulate the production of foods which are especially needed, and we can encourage experimentation on a commercial level with the development of better products (as nutritious white flour) and improved methods of food preservation. Techniques for accomplishing these things include cash and credit subsidies, and legal requirements which provide incentives to develop improved products and processes.

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The Factor of Food Habits

By Margaret Mead[1]

THERE are several ways in which the relationship of food habits to problems of food and nutrition may be attacked. We may interpret the term "food habits" merely as the restatement in individual terms of the dietary pattern characteristic of a group in the population. In such case, to talk of the food habits of the Southern single-crop farmer is merely another way of stating that the dietary pattern of the region is rich or deficient in certain specified ways, or is characterized by certain forms of cooking such as cooking vegetables with fatback. We may also consider the question in terms of the attitudes implicit in the dietary pattern, and particularly attitudes which become explicit with change of the dietary pattern, attitudes that are characteristic of different groups in our population or different regions of this country. We then shift our emphasis from the actual content of the food habits, whether these be expressed in terms of food values or specific food content or in terms of the whole complex of food selection, preparation, and consumption,[2] to the problem of existing attitudes toward food and the cultural expectation of ways in which changes in food habits may occur.

Characteristic Attitudes

When we so shift our emphasis, we shall be dealing with a series of attitudes characteristic of American culture, shared to lesser or greater extent with various European countries—we will not be using the term "food habits" as a cross-cultural scientific abstraction. We shall deal with the term "food habits" as a significant native concept, that food habits are an aspect of individual behavior which are subject to change and which are characteristically selected out by parents, teachers, physicians, physical trainers, and others, to be commented upon in terms of change.[3] So while it is necessary, in order to inaugurate long-time nutritional changes in the diet, for instance, of Greene County, Georgia, to know the concrete details of the diet there, it is also necessary to know in what terms the inhabitants of Greene County view their diet, how changes may be phrased so that they will be accepted and welcomed, what phrasings should be avoided because they will awaken anxiety, mere temporary compliance, or actual resistance.

When nutritionists, thinking of the daily allowances, or economists, planning for the maximum utilization of the available food supply, leave out of account the attitudes toward change in food habits, although they may be successful in altering the behavior of a specified number of individuals or in reconciling a given part of the country to the temporary disappearance of habitual elements from their diet, there is no assurance that the changes so introduced will lay the groundwork for a future greater responsiveness to nutritional science or contribute to wartime morale. By placing at the disposal of these specialists, not professionally occupied with psychological and anthropological problems, a systematic statement of attitudes toward change in food habits, each contribution in the nutritional and economic field may be implemented both in long-time educational terms and in short-time war and immediate postwar terms.

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[1] Dr. Margaret Mead is executive secretary of the Committee on Food Habits of the National Research Council. In this article she has drawn upon the materials prepared for the Committee, but this article does not constitute an official report of Committee activities.

[2] For a brief illustration of such a treatment of a dietary pattern, see National Research Council, Committee on Food Habits, *Italian Food Patterns and Their Relationship to Wartime Problems of Food and Nutrition,* by Genoeffa Nizzardini and Natalie Joffe, Washington, D. C., August 1942.

[3] Professor Kurt Lewin has developed a series of tests which may be applied to groups of school children to reveal the sanctions and surrogates which provide the anchorage of food habits in any given social group, giving a basis on which to plan concerted effort to change them. National Research Council, Committee on Food Habits, *A Group Test for Determining the Anchorage Points of Food Habits,* by Kurt Lewin, Washington, D. C., August 1942.

CHANGES IN APPROVED DIRECTIONS

With a few conspicuous exceptions in very isolated areas, isolated either geographically or socially, Americans recognize at least four possible forms of change in their current food habits.

1. *Morally dictated changes,* that is, changes in selection made among foods actually available to any given individual or family, such as "eating less meat and more vegetables," "drinking milk," or "drinking more milk." These changes are usually seen as movements toward (or away from) food that is "good for you" as contrasted with food that is "not good for you." Generation after generation, children are reared with the recognition that the customary diet contains foods, some more and others less approved, and they are exhorted to make the choice of foods which are "good for you" a matter of moral choice. At the same time there is implicit in the forms of persuasion and reward, an expectation that most children as they grow older, especially male children as they become men, will insist on making willful choices in favor of foods which are not good for them.[4] It is obvious that this attitude toward food habits includes the expectation that the customary diet will continue to include both approved and disapproved foods, from which each individual is required to make a correct choice.

2. *Socially desirable changes,* that is, changes in food habits as a result of altered socioeconomic status.[5] As people move up in the social scale, either within an urban environment, by becoming Americanized, by moving from country to city, or, in some cases, by migrating from one region to another, food habits are expected to alter in conformity with the demands of the new status. Such changes are not necessarily in any nutritionally valuable direction.[6] They include the conviction of the European peasant that America is a country where you eat "meat every day," and the tremendous preference for "white bread" (a sign of status in Europe), which has been taken into account in the present national program for the enrichment of white bread. Such changes also include the greater willingness of Californians to eat dark breads, which can be explained in terms of the higher social status of food faddism on the Pacific coast and the loss of first-generation immigrant attitudes.

3. *Scientifically sanctioned changes,* that is, those in which individuals or

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[4] These implications have been derived from the analysis of interviews with parents about food, from analysis of current advertising, and from a detailed analysis of the results obtained from the food anchorage tests of Professor Lewin, *op. cit.*

[5] The most complete study of food habits viewed as indicators of social status has been made by Herbert Passin, John Bennett, and Harvey Smith in a study in southern Illinois. Unpublished manuscript, University of Chicago.

[6] Earl Koos in a study of attitudes toward food characteristics of low-income families of foreign origin in Yorkville, New York, found that "nutrition courses apparently fail to change either the social or the alimentation pattern of nutrition, although the former seems more susceptible to change than the latter." MS.

groups see themselves as taking advantage of nutritional science, improved processing, increased transportation facilities, and so forth, by altering the content or method of preparation of their diet. This attitude, while it is the most favorable one to the acceptance of sound nutritional knowledge, may also provide a background for various sorts of food faddisms masquerading under the heading of progress and scientific revelation.

These three types of change have in common the idea that the changes are in an approved direction—that the individual whose food selection is morally praiseworthy, socially distinguished, and scientifically oriented, will be a more admirable and healthy person than one who does not respond to these motivations.

FORCED CHANGES

4. There is another set of changes—those which are considered to be the result of *force majeure,* and which may be classified as:

a) Changes dictated by physical circumstances. They occur when the food which is desired or approved simply cannot be obtained because of geographical location, crop failure, failure in transportation, absence of storage facilities, climate, or other reasons. Such alterations in his food habits the individual accepts because he must, with the conscious expectation of returning to his original food habits as soon as circumstances permit. These changes may be seen either as negative, e.g., it is impossible to get fresh meat, or as positive, e.g., one just has to eat rice in the Orient. The changes which are seen as positive, that is, additions to the diet, probably will have more chance of survival in the diet after the conditions which made them obligatory no longer obtain.

b) Changes dictated by a lowering of the economic status of the individual, the group, or the nation. Such changes will be viewed almost without exception as deprivations, and do not provide an example of how permanent nutritional changes can be happily introduced.

c) Changes dictated by alteration in the bodily state of the individual. They may be pregnancy, increased age, illness, or obesity, in which food habits are modified under medical direction, either direct or inferred, in response to a threat or to fear of the physical effect resulting from failure to make the changes. The sanction behind such alterations is very strong, and those who wish to change the food habits of persons who are not ill are frequently tempted to use the bedside physician to back up their teaching.

In addition to these general attitudes toward changing food habits, it is also necessary to consider two recent historical events: (*a*) the treatment of the food situation in the last war, when the whole emphasis was upon temporary sacrifice and, in the name of patriotism, the civilian population was asked to forgo various foods which it liked; and (*b*) the food situation during the depression, when a whole series of distortions was introduced by mass feeding, food orders, and the intermingling of Governmental control, nutritional teaching, and a lowered sense of individual adequacy and self-esteem. Residues from both these experiences enter into the reactions of the American public today to combinations of nutritional education and wartime food measures.

EDUCATIONAL APPROACHES

Policies concerning food—rationing procedures, teaching about food, encouraging the use of substitute or alternative foods, alterations in processing, transportation, methods of preparation, and so forth—can be tested against these various deep-seated attitudes toward change and against the residues in current attitudes of experiences during the last twenty-five years.[7] As an illustration, we may test out the various available phrasings as they may affect the impact of Army feeding on the future food habits of the Nation. The diet in the Army may be phrased to the troops and to their relatives as: eating more of what you ought to eat, more of what is good for you; or a step up in the social scale—the Army gets better food than civilians, the men get as good food as the officers; or the results of the most modern scientific knowledge—the Army is scientifically fed to give maximum energy and health. These are all positive phrasings.

But the diet may also be phrased as: the Army has to eat the kind of food which can be most easily dehydrated, transported, and kept, regardless of its palatability; or we have to feed the Army, consequently there is less food for civilians, and civilian standards of living must be reduced; or doctors are looking after the Army, taking care of the boys for their mothers, and good food is part of a medical prescription—all negative phrasings.

If we then ask which of these phrasings will be most conducive to high morale during the war and least likely to leave a residue of negativism and unwillingness to perpetuate after the war food habits learned in the Army, we find that the third positive phrasing, i.e., that the diet in the Army is the result of the best available nutritional science, is the phrasing that endows the Army diet with the aura of progress and the possibility of further progress. This does not invoke social distinctions which, though potent, are incompatible with democracy, and does not suggest that the soldiers are being forced to be "good" when they eat Army food—a goodness which, in American thinking, naturally leads to a desire to celebrate by ceasing to be good as soon as possible. It does not invoke ideas of scarcity, ideas of lowered purchasing power, or the fear-inducing ideas connected with doctors, seen as physicians for the already ill rather than as public health officials. The addition of new and strange foods, necessitated by conditions of transportation or geographical location, may be given a positive value and thus perpetuated in postwar habits, provided such an addition is also seen as a positive contribution of science, not as a limitation placed upon the Army by circumstances.

INTERPRETING MEAT SHORTAGE

The problem of how the undersupply of meat is to be interpreted to the American people may be analyzed in the same way. People may be told that too much meat is not good for them anyway and they ought to eat less, or that science is providing them with the necessary alternative forms of protein and is enabling them to plan their diet to ensure their being able to deal competently with a lower supply of meat. It is virtually impossible to use the motivation of social status, and it is, perhaps, almost necessary to provide against it articulately, since to most people less meat means lowered social status. Alternatively the negative elements may be stressed and we may emphasize simple lack of meat, or simple need to eat substitutes if we are to live; or the doctor may be invoked in various ways, such as favoring the use of less meat, or providing prescriptions for somehow surviving a protein shortage.

Here again, the invocation of science as a help in handling our available supply of meat seems to provide the best base. If we emphasize that we are meeting an actual condition as scientifically as possible, and use the temporary need to provide alternatives for meat as a way of teaching people what an alternative food means and thus what food values are, we can develop a habit of flexible adjustment—an expectation that food habits will change, and change in conformity with the best available scientific knowledge. The idea that we are using knowledge as a tool to keep ourselves strong and energetic and to provide enough protein for our allies, our soldiers, and the peoples of the postwar world is a definite aid to morale.

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[7] G. Bateson and M. Mead, "Principles of Morale Building," *Journal of Educational Sociology*, Vol. 15, No. 4 (Dec. 1941), pp. 206–20.

If wartime food policies concerned with the production, conservation, and consumption of food are actually analyzed in some such way as this, the wartime setting may be used to short-cut and accelerate the shift in the American diet from a traditional diet, uneven and often inadequate, sanctioned by usage and folk belief, to a diet responsive to changes in nutritional science. Food and nutrition are presented to the public in a variety of forms—a headline, "Meatless Days Are Here Again"; a remark in a homemaking program, "Now about other forms of protein which you can use instead of meat"; an angry letter, "Are we to go back to the terrible days of the depression"; or the admonition, "People eat too much meat anyway." An integration of appeals is possible only if we recognize that in every such context Americans are forming attitudes about food in the war, food after the war, food as matter for dutiful behavior, aggressive bad behavior, or scientific sensible behavior, and food habits as rigid and alterable only under duress, or food habits as flexible and subject to responsible scientifically guided choice.

PITFALLS TO BE AVOIDED

Serious pitfalls lie ahead of us if we invoke the war as a temporary situation, momentarily depriving, to be followed by a return to a halcyon world where everything will be the same as it was before the war. Such an attitude was probably partly responsible for the increased use of sugar after the deprivation during the last war. To the extent that the war is seen merely as a depriving interruption in normal life to which the individual must submit out of patriotism, all changes introduced during the war, no matter how nutritionally sound, how economical of human effort and conducive to human welfare, will be negatively toned. Where the war is accompanied by very real deprivations, as in the English diet, it is virtually impossible to escape at least part of such a negative phrasing. But in the United States, present indications are that many of the food changes which the war will bring will not be real deprivations, except temporarily insofar as they involve alterations in fixed habit systems.

If emphasis is placed upon the war as an opportunity to break away from unfavorable past situations, such as a poorly balanced diet, or vegetables whose nutritional value was lost through slow transportation and inadequate storage, and if wartime conditions are seen as a rehearsal, with very limited stage properties, for a different way of life after the war, then this danger can be avoided, and nutritional improvements made in the wartime context can be carried over into the postwar world. But it is a danger which must be faced continuously and articulately. The association in the public mind between nutrition classes and first aid classes, while giving a temporary impetus to the interest in nutrition, carries a potential pay-off in a revulsion against nutrition as a measure associated with the war. This particular danger can be guarded against also by distinguishing between immediate wartime nutritional tasks, like emergency feeding, and ever present nutritional tasks specially necessary in wartime.

Another great pitfall lies ahead if we invoke the moral element in our attitude toward food habits, by asking people to be good, to eat what is good for them, and by backing up the request in authoritarian terms, rather than by asking them to be responsible and intelligent in the use of science to increase their ability to function in society.[8] The docile, childlike acceptance of authority is a state of mind in which any change in Governmental policy will be interpreted as a sign of weakness, and in which any exposure of that policy as unjustified will be resented. This danger confronts all programs where appeals to the cooperation of the public are necessary. It is particularly present in the matter of food because of the traditional pattern of rewarding children with love and sweets for eating what is good for them.

FOOD HABITS IN OTHER COUNTRIES

In addition to the need to use the wartime situation to develop a cultural pattern of intelligent flexible and responsible dietary change, there is also a need to build up a competent body of knowledge of the attitudes toward changing food habits held by members of other cultures for whose feeding we may have to take the responsibility. The way in which we administer the programs of food distribution in occupied or ravaged areas may be one of the most potent and flexible tools for building world order.[9] It can be done intelligently only if the administrators are equipped with systematic knowledge of the cultural contexts surrounding food in the countries where they are to administer relief.

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[8] In a recent experiment in Iowa, it has been demonstrated how much more effectively food habits can be changed by the decision of the group than by admonition and exhortation presented in lecture form. National Research Council, Committee on Food Habits, *The Relative Effectiveness of a Lecture Method and a Method of Group Decision for Changing Food Habits,* by Kurt Lewin, Washington, D. C., August 1942.

[9] L. K. Frank, "World Order and Cultural Diversity," *Free World,* Vol. III, No. 1 (June 1942), pp. 83–86.

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The Social Milieu of Malnutrition

Compiled by JOHN D. BLACK

THIS article consists of an assembly of material bearing on the general social background of malnutrition in the United States, which is drawn from various sources that will be indicated in the progress of the article. Some of the material is reproduced almost exactly without quotation so as to escape the danger of misconstruction. The general framework for this article was suggested by Drs. Anderson and Bowman of Iowa State College, and to them must be attributed the introductory statement and the section on Recent Changes in Diets.

CULTURAL FACTORS

A review of this nature should begin with a brief introductory statement about general cultural factors as determining nutrition. A general analysis of this subject is found in the article "The Factor of Food Habits" by Dr. Margaret Mead, in this volume. People behave according to what they see and have seen around them, according to the habits they have developed and the customs of the group in which they function. Some customs and habits are easily uprooted when an active stimulus to change appears. Some are more tenacious. The breaking down of some unfortunate dietary practices will be accomplished easily, while others persist. Since food is a basic necessity, and is part of a frequently repeated family routine, attitudes and usages centered around it are intimately connected with individual and group life. Food is an important symbol of kinship; the family meal is one of the few remaining integrating factors in the family group. The giving or withholding of food is related directly and symbolically to our systems of social control. To a considerable extent, therefore, the conditions and ceremonies associated with food consumption are the most deeply rooted aspects of food use. Very great changes in content may be accomplished within existing frameworks of ceremonial food usage; but not without careful attention to methods and strategies of control.

This point is well illustrated by the deeply rooted uniformity of certain elements in the menu pattern of a large proportion of the population. An example is the combination of meat, potato, vegetable, dessert, and beverage, to which any foods used must be accommodated. We have an almost equally uniform practice of varying the menu, wherever economically feasible, among the meals of the day and the days of the week. Specific preferences and prejudices, interlocked with aesthetic and prestige motives, are extremely widespread. Insistence on meat for the main meal and the distaste for whole-wheat bread are examples.

Within the distinctive dietary of the United States, there are nevertheless definite and important group variations. Among the most deep-seated influences are the traditions of particular immigrant groups and food practices associated with religion. Quantitatively, the most important sources of variation are income and schooling. Along with changes in income and increased education, the prestige of upper-class diets stimulates the adoption of new foods. To be taken into account also in any attempts to teach new eating habits are the customs peculiar to any family and community.

Also not to be overlooked in this connection is the type of behavior pattern to which the sociologists refer as fad or fashion. Fashions in eating are less rapidly changeable than fashions in dress, but food consumption patterns may none the less respond to such stimuli both directly and indirectly. A major factor encouraging better diets in recent years has doubtless been the emphasis on the slender silhouette in women, and the present education drive is making the learning of nutrition a fad. The new diets thus induced may sometimes persist after the particular stimuli that initiated them have faded away.

RECENT CHANGES IN DIETS

We may summarize the most significant trends in food consumption during recent generations in a few statements. The typical diet has become more varied in three respects: a larger assortment of foods is consumed, some of which were unknown to our grandparents; many well-known foods are used in a greater variety of forms; and interesting diets are not restricted to particular seasons as formerly. Another significant trend has been the substitution at an accelerating rate of milk, fruits, and leafy vegetables for meat, potatoes, and grains. Even the depression did not stop this shift. At the same time, two trends that on the whole are nutritionally disadvantageous are a greater consumption of sugar and the substitution of refined foods such as polished rice and white flour for the more healthful earlier forms.

The changes just cited have been almost universal within the Nation. Local variations in diet have become less marked, and ethnic differences in food habits are gradually giving way as a result of greater diffusion of eating practices through the whole population. The marked nutritional superiority and variety of the diets of upper income groups are being rapidly adopted by middle income families and to some extent even by the lowest income groups. This has been fostered in part by the progressive shift away from heavy manual labor and high calorie requirements.

The rise of new food customs has taken place within the broad framework of a dynamic culture in which technological changes have been unusually conspicuous. Rapid development in one sphere of life has increased the propensity to initiate and accept the new elsewhere.

The rising general plane of living, and the changing relative costs and availability of different foods on the market, are the two economic factors which have played major roles in determining both changes in diets over time and group differences in diets.

At low planes of living, the fulfilling of calorie requirements by the cheapest methods possible is about all that can be accomplished; this usually involves a very low consumption of the protective foods. But the rapid rise in real wages since the middle of the nineteenth century and the increasing availability of protective foods at lower costs has encouraged a shifting of diet in their favor at each income level.

This development has been encouraged on the supply side by new technologies for growing, processing, transporting, and storing foods, and by improved market organization. Gains would doubtless have been greater had many of our persisting distributive wastes been ironed out. High labor costs would have been a more serious handicap had it not been for the arrival of several immigrant groups, such as the Japanese and the Italians, who have specialized in truck gardening. Increased supplies have also both caused and responded to demand increases. Demand has been influenced to some extent by increased nutritional knowledge and new housekeeping practices.

A factor working against the general trend toward a greater use of protective foods is that a larger proportion of the population now lives in urban communities where facilities for home gardening are inadequate, and their way of life fails to provide family members with the skills needed for successful gardening. Even for those families still advantageously situated for the growing of home gardens, a pseudo-economic accounting has discouraged it. By putting an excessive money value on home labor which would otherwise be idle, the conclusion is often reached that such home gardens "do not pay," even when in fact the alternative labor income is zero.

Gardening has traditionally been one of the basic routines in family life centered around food. This group of activities has dropped out not merely for economic reasons, but also because of the growing depreciation of manual labor, new patterns of leisure activities that separate parents from children, and the trend toward short cuts in housekeeping.

FACTORS IN POOR DIETS

In spite of greater and more widespread distribution of fresh vegetables, milk, and meats, and improvements in methods of their preservation, made possible by modern transportation and refrigeration, Dr. Russell M. Wilder[1] considers that undernutrition is now more serious than at any time in our history. It is worse today mainly because detrimental changes in our dietary habits which started sixty years ago have progressed almost uninterruptedly up to the present time, so that there is a cumulative as well as a more inclusive effect.

Prior to 1880 our grain was milled almost entirely in local communities, by methods which retained most of the vitamins and minerals. Since the introduction of the patent process from Hungary by way of England, grain has come to be milled more and more in the region around Minneapolis, and then transported to all sections of the country. The patent milling process, by removing most of the germ and the bran shorts from the flour, renders it much less susceptible to spoilage. This feature recommended the patent process to the millers and the food distributors. The American people, at the same time, preferred the resulting white, cleaner, more uniform, and better baking flour. This process has caused the removal of about 90 per cent of the vitamin B_1 from flour, and 70 to 85 per cent of other fractions of the vitamin B complex, and of iron

The second major "improvement" in the American diet which has had a detrimental effect has been a marked increase in the consumption of sugar. About one hundred years ago our annual per capita consumption of sugar was not more than ten pounds. Since the Civil War, and especially since 1910, this has progressively increased so that by 1939 our consumption of sugar amounted to more than one hundred pounds per capita per year. Dr. Norman Jolliffe[2] points out that these two sources of calories, white flour and refined sugar, make up about 55 per cent of the calories consumed by the American people, and this total source of calories does not provide more than 50 International Units of vitamin B_1. Thus, a 55 per cent fraction of the calories in the American diet of 1840 containing a minimum of 600 I.U. of vitamin B_1 has been replaced in the contemporaneous American diet by a like fraction containing only about 50 I.U., and has been correspondingly reduced in the other B vitamins and iron. These two factors, white flour and white sugar, must bear much of the blame for the present nutritional inadequacies in our country.

The reduction of vitamins and minerals in our dietary brought about by the substitution of white flour for whole

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[1] Division of Medicine, Mayo Clinic, Rochester, Minnesota.

[2] Bellevue Hospital, New York City.

TABLE 1—Vitamin and Mineral Content of Flour

	Whole Wheat [a]	White Flour [a]	Enriched Flour [b]	
			Minimum	Maximum
Thiamine (mg. per lb.)	2.04	0.23	1.66	2.5
Riboflavin [c] (mg. per lb.)	1.13	0.18	1.2	1.8
Nicotinic acid (mg. per lb.)	12.3	3.7	6.0	9.0
Iron (mg. per lb.)	18	4.5	6.0	24.0
Calcium [d] (mg. per lb.)	240	72	500	2,000
Phosphorus (mg. per lb.)	1,700	460	—	—
Vitamin D [d] (I.U.)	—	—	250	1,000

[a] Council on Foods and Nutrition, American Medical Association.

[b] Food and Nutrition Board, National Research Council; and U. S. Food and Drug Administration.

[c] Inclusion in "enriched" flour and bread was optional until July 1, 1942.

[d] Inclusion in "enriched" flour and bread is optional.

wheat is illustrated in Table 1. It will be noted that only 11 per cent of the thiamine originally present in whole wheat survives in flour made by the patent milling process, whereas stone grinding preserved nearly 80 per cent of this vitamin, and proportionate amounts of the other nutritive essentials.

The amount of candy sold in this country in 1939 was sufficient to furnish 90 calories per capita per day. The amount of alcohol consumed in the United States in 1938 was sufficient to furnish about 86 calories per capita per day, and probably exceeded 200 calories per person of alcohol-consuming age. Data on the amount of calories furnished by sweetened carbonated beverages to our thirsty population are not available at the present time. It must be very considerable, however, and it may exceed the calories furnished per capita by alcohol and candy combined. It is especially pertinent to note that, except for the small portion which is consumed in the home, these three sources of calories were not taken into consideration in the Bureau of Home Economics surveys. In the case of alcoholic beverages. even the amount consumed at home was not counted. Yet these vitamin-free calories, constituting possibly from 10 to 15 per cent of the total caloric intake, play an important part in depressing the quality of our dietary by lowering the vitamin-calorie ratio.

The effect of widespread use of patent flour, plus the tenfold rise in consumption of sugar, has been offset only slightly by increased consumption of vegetables, fruits, and dairy products; very slightly, if at all, in the low income groups who do not purchase these relatively more expensive sources of calories. It has been calculated that it would require the daily consumption of 625 gm. of fruit, 600 gm. of potatoes, 880 gm. of other vegetables, and 1,260 cc. of milk to make up the difference—a combination impossible because of its bulk.

Wholesome daily diet

An excellent way of sensing the significance of the foregoing is to read the following rules set up by Dr. Jolliffe for obtaining a daily diet that will meet the dietary allowances of the Food and Nutrition Board.

> First, eliminate from the diet most vitamin-free or vitamin-poor foods, such as candy, a large part of the sugar (retaining only the amount essential to make the food

palatable), jams, jellies, highly milled grain products that are not "enriched," sweetened carbonated beverages, and alcohol.

Second, include the following in the diet each day:

Milk. For adults, at least 1 pint; for children, 1 quart; a quart a day for all would be better.

One egg.

Meat. 1 serving, at least 100 gm., for an adult.

Vegetables: 2 servings, 1 of which should be green or yellow.

Fruit. 2 servings; 1 of these should be a citrus fruit, and the other tomato, apple, or prunes.

Potatoes: 1 or more servings.

Butter, or fortified oleomargarine: 1 to 4 oz.

Whole grain cereal: 1 serving.

Whole grain or enriched bread: 2 to 10 oz.

The balance of the calories, sufficient to furnish the energy requirement, should then be made up from natural or "enriched" food products.

To obtain such a diet, it is apparent, calls for a drastic revision even of the conventional set of daily menus, particularly of that part of it commonly called the dessert, so as to eliminate from it the high percentage of sugars and starches. It also calls for breaking the habit of quenching hunger and thirst between or before meals on candy and beverages. Given, however, a substantial breakfast chosen from the items in Dr. Jolliffe's list, the need for midmorning replenishment of energy will not appear; and likewise if the lunch is adequate.

Food preparation

A further type of technological change which affects nutrition has to do with the methods of preparing food. On the one hand, it is possible to can, freeze, or dehydrate vegetables and fruits in such a way as to preserve their food values in greater degree than with old-fashioned household methods, and a good deal of the processing is designed with this object in view. On the other hand, more and more of us are getting our meals in restaurants or other public eating places, or living in schools or other institutions, which employ large-scale cookery methods. Studies of such restaurant and institutional cooking indicate that losses are frequently very large. The food is cooked at very high temperatures that destroy the vitamins, or it may be kept warm and exposed to the air for a long time on hot-plates.

Some idea of the requirements for good cooking to preserve vitamin values, and as to the probable losses in ordinary practice, may be gained from the following suggestions offered by the Bureau of Home Economics:

Don't stir air into foods while cooking.
Don't put them through a sieve while still hot.
Don't use soda in cooking green vegetables.
In boiling foods, raise the temperature to the boiling point as rapidly as possible.
Use as little water as possible.
Don't use long cooking processes such as stewing when shorter methods are feasible.
Don't throw away the water in which vegetables have been cooked. Use it in making gravies, sauces, and soups.
Prepare chopped fruit and vegetable salads just before serving.
Start cooking frozen foods while they are still frozen.
Serve raw frozen foods immediately after thawing.

PREVALENCE OF MALNUTRITION

Exact measurement of the extent of malnutrition is not possible. A special committee of the Food and Nutrition Board has prepared a report on the existing evidence on this question.[8]

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[8] Norman Jolliffe, James S. McLester, and H. C. Sherman, *Journal of the American Medical Association,* March 21, 1942.

The most commonly known approach to this problem is to measure food consumption and compare it with standards of adequacy. This is the method used by the Bureau of Agricultural Economics in its study of two thousand families of wage earners and clerical workers from all sections of the country. It reported that 44 per cent of these families were failing to receive a "fair" diet and 76 per cent were failing to receive a "good" diet. The latter is about the same as that included in the recommended daily allowances of the Food and Nutrition Board. It needs to be pointed out that the records of food consumption did not take account of waste and cooking losses on the one hand, or of food and beverages consumed away from the home. These two tend to offset each other, except that candy and beverages do not make up for the important losses of vitamins in cooking.

The committee concluded that official mortality rates furnish very poor evidence as to the extent of malnutrition and reveal only a few categories of deaths from such causes. Furthermore, only a very small percentage of the malnutrition cases produce death directly. Goldberger and his associates estimated on the basis of their 1917 survey that there were at least 33 cases of pellagra for each death reported. Dr. Sebrell states that this figure is too low. Two independent estimates in 1938 were that there are 100,000 cases of active pellagra in the United States.

The evidence from hospital admission rates is equally inconclusive, because the figures reported refer only to the most striking cases of malnutrition. Nevertheless, a Bellevue Hospital rate of 17.5 per thousand is recorded.

The common statement is that one-third of the people of our country are poorly fed and another one-third only fairly well fed. However, these fractions mean little as such. A definite line cannot be drawn around malnutrition. Harvard University's nutrition scholar, Dr. George R. Minot, draws before his classes a block diagram, and across the top of it a line marking off about 15 per cent of the ordinary run of folks in this country who are truly well nourished. Across the bottom he draws another line marking off another 15 per cent or so who have definite clinical symptoms of poor diets. In between comes the great bulk of the population living "suboptimally" most of the time and yet managing to escape positive disability; some of them keeping well toward the top, but others showing clear symptoms of malnutrition now and then. If a fever strikes, or just a cold, the system does not take its usual amount of important vitamins from the food, and without special attention, the nutrition suddenly drops to clinical levels; likewise if the person is exposed to unusual strain or fatigue—as soldiers are in a campaign.

Thus even in our own country, only a small fraction of us are in vigorous, buoyant health all the time. The bulk of us are enough below par to rob us of considerable of the robust energy and good spirits that make life a great adventure.

But if Dr. Minot were drawing his chart to represent some of the Latin Americans, say our own Puerto Ricans, his clinical line would rise and take in half or more of the diagram. One could proceed to enumerate the specific dietary diseases that are prevalent in such situations. It is enough merely to say that men and women living this way get to be old and haggard before they are fifty, and the average expectancy of life may be under forty years.

SELECTIVE SERVICE EXPERIENCE

The incidence of disease and disqualifying defects in our own Selective Service experience has been found to be 36 per cent at 36 years of age as contrasted with only 13 per cent at 21 years.

The increasing incidence of defects with age offers strong indication that they are much more largely to be attributed to manner of living than to inheritance, and that no doubt the cumulative effects of faulty eating, and the effects in later life of deficiencies in the diet in early years, are important phases of whatever the manner of living may have had to do with the defects.

General Hershey in his report to the National Nutrition Conference for Defense, in May 1941, ventured an estimate that perhaps one-third of the rejections were due either directly or indirectly to nutritional deficiencies; that is, about 15 per cent of the total number that had been examined by the Selective Service System up to that time.

More important than any definitely disqualifying effects of malnutrition is the general lack of vigor and stamina that one finds in many of the inducted soldiers and that one almost unmistakably attributes to insufficient food of the right sorts. From the South in particular, a considerable fraction of the men give evidence of too little protein in their diets. Under a combination of balanced diets and outdoor training, very many of the men gain weight and muscular strength as well as endurance. The "toughening" process is frequently as much compounded of good food as of hard work. It would help the progress of the war if the trainees could be properly fed for a few months before being inducted.

THE INCOME FACTOR

In simple terms, says Dr. Jolliffe, about half the people in our country have available for expenditure on food only three-fourths of the minimum cost of a nutritionally satisfactory diet. Like the other factors, income rationing does not stand alone, but is a part of and a cause of poor food habits, poor budgeting of available resources, and the established use of the highly milled grain products and refined sugar. Moreover, it is set within a framework of individual, group, and national resources and requirements, and of industrial, social, and economic policies.

Dr. Minot's manner of classifying malnutrition is as suboptimal and as definitely clinical. The medical profession, however, make frequent use of the term "subclinical." Presumably one might subdivide the broad zone between optimal and clinical into suboptimal and subclinical; but the dividing line would have to be arbitrary.

The most careful study of subclinical malnutrition thus far made is reported in *The Milbank Memorial Fund Quarterly* of July 1941 by Dorothy Wiehl and H. D. Kruse. They made use of four diagnostic procedures that have come to have definite scientific standing. These reveal, respectively, deficiencies in vitamin A, riboflavin, vitamin C, and iron. Examinations were made in the winter of 1940–41 on about 500 pupils from a high school in a low income section of the lower East Side of New York. Of these, 21 per cent were from families on relief, 10 per cent from families with incomes of less than $10 per week, 40 per cent with incomes between $20 and $40, and 29 per cent with incomes over $35. A high income group of 350 pupils in a private school in New York City were then studied by the same methods. Of the low income children, only 4 per cent were free from all four deficiencies; 36 per cent of the boys and 23 per cent of the girls had three deficiencies; and 22 per cent of the girls and 13 per cent of the boys had only one deficiency. A total of 87 per cent of these children showed some stage of vitamin A deficiency; 76 per cent, at least a mild riboflavin deficiency; and 50 per cent, some degree of vitamin C deficiency.

In the high income group, in contrast, only 6 per cent showed deficiency in vitamin C and 2 per cent in riboflavin. No test was made for vitamin A with this group.

This project was carried out with some assistance from a group of WPA workers. Characteristic signs of lack of endurance in these workers suggested the idea of a study of them also. The startling discovery was made that 142 of 143 examined had vitamin A deficiency, 46 per cent of them in the advanced form of it characterized by spots on the cornea of the eyes. At the same time, 38 per cent showed deficiency in riboflavin, 55 per cent in vitamin C, and 7 per cent in iron. It would be interesting to know to what extent the economic status of these workers is the result of deficiency in their diets, and to what extent the cause.

This survey and others leave little room for doubt as to the all-pervading influence of income on diets. Many persons with adequate incomes are suffering from bad food habits; but their numbers are small as compared with those of persons who find it impossible to buy good diets with their meager incomes. Between these two groups, however, is another large group which could feed themselves properly if they knew how to do it, or would take the trouble to correct their bad eating practices. Nutrition policy calls for sets of procedures adapted to each of these groups.

Nutrition Education Programs[1]

By MARY JEAN BOWMAN and C. ARNOLD ANDERSON

THE first and fundamental goal of any comprehensive nutrition education program is that of arousing general awareness of the effects of nutritional deficiencies upon individual health and national welfare, and of spreading an understanding of the methods by which improvements may be accomplished. As this understanding grows, it will motivate actions which will in turn increase the initial awareness of need.

The second broad nutrition goal is the motivation and guidance of individual action. This includes encouragement of better buying practices, home production of protective foods, and improvement in methods of food preservation and preparation.

But individual action is not sufficient in a complex society; community action is important as well. The local schools offer perhaps the best agency for stimulating community consciousness and action on nutrition, since the welfare of children is a central value in American culture. The character of social relations in a local community permits intensive drives for better individual food habits, and provides the kind of pressure that counts upon restaurants and grocers. Adult education is most fruitful when it utilizes existing groupings and lines of influence from neighbor to neighbor. Co-operative community gardens and food preservation and storage centers are persuasive demonstration methods which feed as they teach.

The arousal of public support for national policies directed toward improving the nutrition of the people is a fourth broad goal. Innumerable promising programs fail early or are never launched for the lack of an indication that somebody in particular wants to see them work, while there are always special groups to block them.

WHO IS TO BE REACHED

A nutrition program should be designed to reach everyone, but the need is greatest among the lower income groups in cities, the small farmers of the southeast, and low-income farmers generally. Young children and expectant and nursing mothers are the greatest responsibility, and most of these belong to families with small incomes.

The implementing of an educational program necessitates reaching key persons who are in a position to spread knowledge persuasively and to offer indispensable support for nutrition policies. Doctors, nurses, and elementary school teachers have these opportunities in unusual degree. Since food falls mainly within the sphere of women's work, no program can succeed if it fails to enlist their interest and improve their knowledge, though they are limited in what they can do for their families as long as men exert their will to enforce food prejudices upon the family.

MOTIVATION AND PERSUASION

Nutrition education programs appeal to people as consumers, as producers, and as citizens. Among the "rational" appeals, health is primary. Fashion and prestige are vivid incentives which can be molded to serve nutrition education; "keeping thin" has changed more diets, perhaps, than all the textbooks. The majority of people wish also to eat economically, but prestige factors frequently block middle-class families from taking advantage of demonstrations of good eating at low cost. Appeals to women to be "intelligent homemakers" and advice on how to make husbands happy with good diets may reach groups that do not respond to economy appeals.

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[1] Completed September 1, 1942.

Producers and distributors of food have not yet been persuaded that provision of the foods for a better diet at lower cost can be good business. Neither have public or farmers yet learned that the Nation can aid agriculture and still obtain the foods it needs cheaply.

The citizen has been discovering in recent years that the "general welfare" is not just a phrase in the law books, but comprehends a good diet for everyone, just as it does education and adequate medical care. Appeals to community pride need not be restricted to "shop at home" pleas or "support the home team." A simple chart showing the number and residences of malnourished children, or the school health examination record of the boys rejected by the draft, could stir any town for a nutrition program. And now we have the war, in whose name all things are possible. It is no accident that a national nutrition drive has again been launched.

AMONG FARM FAMILIES

If we want to learn what an ably administered, generously financed, capably staffed, and long maintained nutrition program can accomplish, we may look at the history of home economics extension work. At first the emphasis in this work was on manual skills like gardening and canning; but more recently there has been greater attention to food selection, consumer marketing, and nutrition. Efforts have been made to integrate food production, food selection, and meal planning. There has been a steady emphasis upon health, particularly child health. While one may be properly skeptical of the tremendous claims for results presented in official reports, there can be no doubt that this program has improved diets.

Extension methods suggest certain tactics generally applicable in teaching nutrition to adults. Ingenious exhibits explain what to eat and how to obtain and prepare it. There are self-rating scales to test one's knowledge and evaluate yesterday's meals. Individuals and groups compete in garden contests, canning exhibits, and meal planning. Local leaders have participated by conducting neighborhood classes and serving as local channels for new knowledge. Thus scientific findings have been systematically translated into concrete practices, while continuity of trained personnel and program over a quarter-century has encouraged people to do the things they talk about. Concreteness and local organization have saved the Extension Service from being swallowed up by short-run ballyhoo programs.

There are, nevertheless, shortcomings in the extension program, and success has varied among states and communities. The Extension Service has not presented convincing evidence of a conscientious effort to reach low-income families, and it has not solved the problem of how to interest men and boys in diet. Producer interests have sometimes prevented extension agents from advocating public policies and individual market selections which could benefit consumers—including less vocal farmers; examples are the failure to recommend margarine for low-cost diets, and the opposition to extending food use through lower prices.

The Farm Security Administration has profited by some of the shortcomings of the Extension Service, and it has pioneered in new methods of teaching. Families on a lower economic level are being reached, although the inherent ambivalence of a loan and teaching agency has limited this effort. Intensive supervision with ready adaptation to each family's situation (the most distinctive educational demonstration of this agency) has shown that nutrition education touches so many aspects of family life that only the adoption of case-work methods will insure an effective program among some groups. The astounding home-production gains made by FSA clients prove, if anyone needed proof, that poor and malnourished families will respond actively to the appropriate educational approaches.

THE SCHOOLS

The evidence is that until recently the schools generally have not utilized their opportunity to spread nutritional knowledge and arouse interest in better diets. Physiology and cooking have been taught since the late nineteenth century, but direct nutrition lessons seem to have been exceptional. Emphasis has been shifting from specific kitchen tricks to meal planning and food selection under the impulse of two interrelated trends: more attention to applied subjects, and progressive education. These newer approaches, however, are limited for the most part to cities and to high schools. And it is discouraging that studies testing carry-over of nutrition lessons into later behavior have produced mainly negative findings.

The teaching of better eating habits through school lunch programs—where the copying of age-mates and of teachers can smoothly introduce new food experiences—has been gaining momentum for a third of a century, and especially since it has received Federal encouragement. This was for a long time a hunger-fighting rather than a nutrition program, and even now its educational potentialities are largely undeveloped.

Adult education classes, which are uncommon despite a sharp growth in recent years, offer important possibilities for spreading nutrition ideas in urban centers; and much could be carried over from the experiences of the extension service. Despite occasional settlement house and workers' education courses, the adult education movement reaches mainly middle- and upper-class groups.

The schools could expand all of these programs which are found today in only a few places. Nutrition teaching in the schools could also be related to a community health program, as in the giving of nutrition tests in school clinics and the reporting of results to parents.

ADVERTISING

Commercial advertising is another important avenue for spreading knowledge. Businessmen have a certain advantage in their freedom to use appeals which could not be justified in a public program: the beautiful figure, the cameo complexion, the impressing of friends and neighbors. Moreover, advertising ties in closely with action in food selection and ways of preparing and serving meals.

But we can expect constructive action from advertisers for the most part only when they believe it will be profitable. Those selling foods most needed in modern diets do serve the public interest, but there is insufficient heed to nutritive quality or the disadvantages of overselling. Advertisers are interested primarily in attracting the public with money to spend, rather than in showing families how to get the most for a dollar.

Public policy can increase the educational value of advertising in a number of ways. Legal prohibition of false advertising is the most obvious. Quality standards can restrict the misuse of science in vitamin claims, and government publicity for these standards can make genuine quality appeals by merchants more profitable. Policies which restrain advertisers in some ways can indirectly force their activities into more constructive channels. A discriminatory tax system which favors industry over firm advertising could exert pressure in this direction.

Although factory lunches are not advertising, they are a commercial channel for nutrition education. A generation ago many businessmen failed to recognize that shorter hours of work would increase productivity. Today few employers realize the similar opportunities for profit through improving diets by means of lunches or by providing free nutrition consultation services for families of their workers.

FOOD MARKETING REGULATIONS

The Federal Government has directly engaged in consumer education through the publication of *Consumers Guide*, the fostering of consumer study groups, and the publicizing of activities under food and drug legislation and provisions for food grading. These services have dovetailed into the growing consumer movement, but have probably not reached beyond the middle classes as yet. Surplus disposal programs are also teaching devices.

Some local and Federal laws have restricted or distorted consumer information concerning foods. A striking example is a state law which permits using the label "fresh" only on eggs produced within the state. Certain laws, on the other hand, serve to educate buyers about food quality; provisions concerning milk and meat are often of this nature, though they too are misused.

The drastic food distribution policies which may be necessitated in wartime can have great incidental educational value. Food rationing, for example, can contribute to consumer enlightenment and to diet improvement in two ways: the fact that accustomed foods are unavailable breaks the habits of many people and sends them in search of a new pattern of food use, and the structure of rations may show the public what foods are regarded by experts as minimum essentials for safe diets.

OTHER AGENCIES

Health departments and public welfare agencies have used few of their opportunities for nutrition education in most communities; preschool clinics are a shining exception. The WPA has made valuable contributions in some areas through its supervision of communal feeding projects, courses in homemaking, and development of home and community garden programs. Private social agencies and schools of social work have taken nutrition seriously in only a few instances.

THE CURRENT NUTRITION DRIVE

The war has stepped up the tempo of nutrition education, and is bringing together all the groups and agencies interested in the improvement of diets. Such an impressive alignment helps to convince the public that the problem is important. It also enables each agency to see how its program may be fitted into the whole. More than a score of government bureaus conducting research or education on the food problem and health were included in an interdepartmental committee in 1936. In August 1940 the Consumer Commissioner of the Advisory Commission to the Council of National Defense established an over-all nutrition and planning committee. In November the Federal Security Agency was instructed to co-ordinate health, medical, welfare, nutrition, recreation, and related programs affecting national defense; and the over-all policy committee together with representatives of national nutrition groups became the Nutrition Advisory Committee to Mr. McNutt. The efforts to focus the programs of the Federal agencies and to integrate them with the work of other public and private agencies culminated in the National Nutrition Conference for Defense in 1941.

Meanwhile, the National Research Council set up a Food and Nutrition Board which has provided a nutrition yardstick and supported the flour enrichment program, and a committee to do research on food habits. The more recently established Committee on Nutrition in Industry has been carrying on special studies to stimulate programs of factory feeding.

The Nutrition Conference bolstered the already existing tendency to found state, county, and community committees to foster and co-ordinate local programs on all phases of food use. By March 1942 every state and about half the counties had such a committee. Local Civilian Defense Councils and the Red Cross have co-operated in many cases. There is inadequate information as to what these state and local committees have done, but a few things attempted in some areas may be mentioned.

As a first step, some state committees have fostered refresher courses so that former nutritionists may aid in community education. They have urged communities to examine their own problems, especially through the schools. It has been suggested that local committees sponsor study and practice groups and demonstrations, and that they encourage group feeding projects to serve defense workers and school children. Public health and nutrition centers could set up consultation services. The income obstacle to better nutrition could be partially overcome by school lunches, community gardens, food preservation centers, and low-cost milk plans.

The Nation now has the plans and the skeleton organization for a comprehensive educational and action program on all phases of nutrition and food consumption.

THE FOOD CAMPAIGNS OF WORLD WARS I AND II

In the last war the demand for food seemed unlimited, and the principal appeal was conservation, with more emphasis on the preventing of hunger than on the insuring of a well-balanced diet. Since that time nutrition knowledge has increased, and early in this war we persuaded ourselves that we had an abundance of food. As a result, the primary theme of the current campaign has been better diets. This emphasis will probably persist, as it has in England, despite the fact that with growing food shortages the theme of conservation is again coming into prominence.

Our greater knowledge of nutrition is being expressed in an emphasis on the production of protective foods, and we have a more practical knowledge of how to use available foods for adequate diets. The authoritatively sponsored "nutrition yardstick" plays a central rôle in the present campaign. If we can retain this emphasis upon quality rather than quantity, postwar nutrition education can evolve out of the present campaign without first neutralizing many of the wartime motivations.

The Victory Garden campaign has thus far been conducted with somewhat more discrimination than in the last war. An attempt is being made to encourage gardening only by people who have the necessary habits and facilities. The experience on the WPA garden program is especially useful as a guide in deciding where and how to conduct community garden projects. The schools are again taking up the garden idea, but this time with a greater realization that the value of the program is primarily educational and that its contribution to production is slight.

The depression has taught us that group feeding and other ways of supplementing diets are feasible and beneficial.

The example of England may encourage a greatly expanded program of communal feeding, primarily through factory and school lunches, though as yet accomplishments are slight. There will be increasing pressure to set up some type of communal feeding in war industry centers to take care of the newly expanded working population and especially the children of working mothers. This impetus is greater than it was in World War I, and it will be increased if we have any sizable evacuations.

EVALUATION OF THE WAR PROGRAM

In evaluating the wartime nutrition program it is necessary to consider briefly some of the special advantages and disadvantages in a war situation. Difficulties arise in the attempt to push a nutrition campaign in any war. Long-run considerations are easily forgotten and plans are smothered under the more imminent and dramatic war adjustments. Hoop-la is likely to displace genuine education. Appeals are distorted, and overdoing the patriotism motif may bring about a postwar "rebound to normalcy." Other campaigns compete for the public's time and interest, and it is increasingly difficult to find trained personnel. Moreover, in abnormal situations with regard to food supplies, the conservation aspects of the program are confused with long-run plans for diet improvement.

On the other hand, it is possible to capitalize on some aspects of the war situation. The interest in nutrition and the concern for the general welfare which grew out of the depression are heightened by the demands of war and the evidence of poor health in the draft. It seems reasonable to expect that the wartime campaign should publicize the dramatic findings of recent research, that it should enthuse citizens for a worth-while crusade, and that it should persuade the public that many of the defects of youth could be corrected by better food. These things have been accomplished in a significant degree.

The changing of individual action in order to establish better diets is a major objective of a nutrition program, whether in war or in peace. The war speeds up and intensifies programs already operating over many years, especially that of the Extension Service. Thus far, gains through other agencies are uncertain; there has not been time to accomplish fundamental changes in food habits through the stimulus of the war campaign. Insofar as new information and attitudes are translated into individual consumer behavior, they will be expressed first in the simple and relatively superficial phases of diet modification, as in increased buying of "victory specials." Only time can tell to what extent current changes in the range of experience will establish permanent improvements in diets.

The flour enrichment program has been much publicized. The enrichment of staple foods is in the nature of a hedge to offset the preference of consumers for highly refined foods; this has strategic value in that the nutritive quality of all diets is automatically improved without persuading individual consumers to change their habits. Records of greater purchases of enriched flour following an intensive but brief publicity program are likely to overstate success, since much of the change will be only temporary. The enrichment program itself is evidence of failure to persuade people to buy whole wheat bread. Failure of education with regard to enrichment may be followed by laws making such enrichment compulsory; but the failure of education must not be misconstrued as the failure of the nutrition campaign. In fact, compulsory enrichment may be regarded as an example of success.

The encouragement of community action, including more and better school lunches and nutritionally good factory canteens, is also a part of the war program. But evidences of gain since the war began are small. That the factory canteens in armament plants have made little headway as yet is due both to lack of clear-cut national policy and to the tendency in many localities to say much and do little.

The danger that the nutrition campaign may melt away into a mere publicity spurt is very real. It may not be without significance that the number of items listed under "nutrition" in the *Reader's Guide* did not increase after mid-1941 following the sharp rise beginning in late 1940. Setting up a nationwide organization through all levels of local and national participation is an important step in the long-run development of improved nutrition, but organization should quickly be followed by action. In local areas even organization is spotty, and it remains to be seen whether the plans will take hold firmly over a large part of the country. Local difficulties are increased in some communities by conflicts and lack of integration among different agencies and cliques.

Lack of integration in the Federal Government has not yet been cleared up. The Nutrition Advisory Committee to the Director of Defense Health and Welfare Services gives some promise of serving as a long-run co-ordinating agency for the educational aspects of a national nutrition program; but conflicts among the agencies concerned with food supplies and rationing have not yet been eliminated by the creation of the Food Requirements Committee. This problem is especially serious now that rationing of a number of foods is approaching. The major problem for national policy making in the future appears to be integration among the agencies concerned with food production and distribution, and the co-ordination of their activities with those of the Nutrition Advisory Committee or its successor.

Finally, as one would expect, businessmen criticize Mr. McNutt for not paying sufficient attention to them, or using commercial advertising in the nutrition campaign. Other groups criticize him for selling out to business by permitting the use of the Nutrition Committee seal on advertisements of "protective foods" with insufficient restriction. It is claimed that he is in this way jeopardizing the Food and Drug Administration. It is difficult to evaluate Mr. McNutt's policy in this respect, because such an evaluation, to be realistic, must take into account the pushes and pulls of business groups and their power to aid or to block the nutrition campaign.

TASKS FOR THE FUTURE

The task for the future is threefold. First and most obvious is the application of existing knowledge in a discriminating and active program of nutrition education. Second is the seeking out and developing of channels for reaching those in greatest need of help. And third is the furthering of research both as to what should be taught and what methods of teaching are most effective.

Certain methods of nutrition teaching appear to have been especially successful. These are primarily methods involving demonstrations and personal or small group consultation. Greatest success has been obtained, however, with sweeping programs using every method and channel to reach as many people as possible as many times and from as many angles as possible. A comprehensive program sustained over a period of years, and one in which teaching is geared into existing consumption patterns, can break down food habits and prejudices, ignorance, disinterest, and inertia.

Indirect education may succeed where direct instruction would fail. Communal feeding plans and low-cost food distribution provide opportunities for changing attitudes and ultimately habits. These are especially fruitful channels for reaching men and small children.

Some groups are harder to reach than others. Ignorance of good diets is greatest in those groups least easily influenced by existing educational programs. There is need to develop ways of reaching the lower-income half of the adult population. Particularly suggestive in this connection are the communal feeding projects already discussed and possible food guidance services for urban families similar to those of the Farm Security Administration in rural areas. Since work groups are increasingly significant associations in the life of an adult, labor unions might be persuaded to take an active interest in nutrition education and clinics. Since at best not all people can be influenced by education or communal feeding, there is a strong case for supplementing other techniques by the enrichment of staple foods, probably by compulsory regulations.

An expansion of research on individual and social aspects of food habits and attitudes can contribute to nutrition education by pointing out those phases of food use in which change is latent. These studies can also help to determine the extent of public acceptance of diet improvements necessary before explicit compulsion or inducement may be applied to the remaining parts of the population. Research on the effects of good nutrition on productive efficiency is of importance in enlisting the necessary support of business.

There is need for the study of an analogy. A cursory reading of studies evaluating the school health program in the United States suggests that it has had limited success except in scattered communities. Here is a program which has been in operation for fifty years, with variation in scope and pedagogic skill from community to community. Yet public health experts themselves have described some of these activities as "a farce." There is evidence that it is mainly in the sphere of parental care for very young children that striking improvements in health habits have occurred.

Aside from a rising scale of living, the improved health situation in this country in recent generations is probably more the result of sanitary policing than of individual observance of health rules. It is to be hoped that this judgment is unfair, but those conducting nutrition education could profit by finding out why such judgments are printed by serious students and under what conditions a few health programs have been conspicuously successful. A small amount of money spent in the examination of health education could vastly improve the efficiency of the nutrition education program.

Principles of Consumer Rationing[1]

By HANS STAEHLE

THE intent of this article is to outline the principles underlying consumer rationing in its various forms. First of all, distinction needs to be recognized between the kind of rationing that takes place in the ordinary market economy through price and income, and the administered kind of rationing which we now have for sugar and gasoline.

RATIONING THROUGH PRICE MOVEMENTS

In a market economy where consumers are free to spend what money they have on consumers' goods in whatever way they see fit, the function of rationing is performed by price movements. If the supply of any one commodity becomes short relative to the quantity that consumers would collectively wish to buy at the current price, there will be a price increase to prevent consumers, as it were, from buying more than there is. The main reason why this arrangement, in spite of its obvious social blindness, has been thought tolerable in peacetime is that price movements are indispensable for the maintenance of a production system based on private enterprise. And private enterprise has, in spite of certain monopolistic tendencies, seldom allowed increases in relative price to go very far, or to last very long, without responding with larger output.

In wartime, the operation of the market mechanism as just described is hampered by shortages in resources available for the making of goods for civilian consumption. Adjustments in the rates of output of different industries are restrained, if not completely ruled out, by scarcity of materials, manpower, and plant capacity. Movements in relative prices may therefore have little effect upon supply.

On the other hand, it is clear that the *economic* burden of the war largely consists in the curtailment of civilian consumption during the war, and can be shifted only to a limited extent into the future. Consequently, the methods by which the limited amount of consumables available is allotted to consumers will really decide how the major part of the economic burden of the war is distributed among the people. Although price movements would do the job, they would do it badly.

For these reasons, among others, there is a general agreement that the price mechanism should not be allowed to function freely during wartime. The prevention both of particular price increases—especially for necessities, such as might easily develop for a number of reasons—and of a general rise in prices (inflation) therefore becomes a major objective of the Government's domestic wartime policies. Consumer rationing by administrative action is one of several tools designed to achieve this purpose. Its implications and effects must therefore be seen against the background of these two objectives.

RATIONING OF SCARCE COMMODITIES

When a commodity becomes scarce, the mere legal prohibition of price increases is an extremely unsatisfactory and wholly inadequate method of procedure. Since, in such an event, demand at the existing price by definition outruns supply, the decision as to who is going to share in the available quantities, and in what proportions, rests with retailers, who will quite naturally give preference to their best customers, as they have been doing with meats and coffee in recent months. To prevent this as well as concealed price increases, it is necessary to introduce a rationing scheme which makes the purchase of a unit of the scarce commodity dependent upon the surrender not only of the money price but also of a rationing coupon. In order that no leaks shall occur and no black market operations develop, close control over supplies is required. The rationing of food in Great Britain has been relatively successful because a large part of the food supply comes from abroad and can be controlled at the port of arrival. By the same token, it will be difficult to avoid leaks in this country, unless bottlenecks can be created through which the supplies of rationed commodities must flow.

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[1] Some related aspects of consumer rationing are analyzed in the article on "Food Supplies for Our Civilian Population."

Rationing of an individual commodity seems fairly simple, and in the case of such a one as sugar it actually is, particularly because there are no close substitutes. Given such substitutes, account must be taken of the effect of the rationing of the commodity upon the related articles. If the consumption of butter is to be regulated in this country, it may become necessary to regulate also the consumption of oleomargarine, lard, vegetable shortenings, and other fats. Demand for these closely related commodities will increase as butter consumption comes to be regulated, and in the absence of regulation, their prices will rise. To the extent that they are so-called "superior" substitutes, the effect of this rise will mainly fall upon the wealthier classes. If they are "inferior" substitutes, the increase in price will be harmful to the poorer sections.

Thus the idea suggests itself quite naturally to include within one ration whole groups of related articles, as has, for instance, been done in Great Britain with clothing and miscellaneous food items, including canned fish, other canned goods, dried fruits, and dried vegetables. The rationing system suited to groups of related articles allots to each consumer a certain total number of points per unit of time, and fixes, in addition to the money price, a point price for each commodity included in the group. Each consumer is left free to choose the combination of rationed goods which he prefers. This system offers an obvious advantage over the scheme of fixed rations in that differences in individual demand dispositions, due to differences in tastes and habits or in levels of income, may, within the limits of the total ration, be brought into play. If the demand for any one article threatens to outrun the supply, the point price can be increased while keeping the money price constant. Such a system of rationing is an interesting device by which to segregate a limited sector of commodities in such a way as to avoid money price changes and yet to let consumers make the best of their point income by allowing them to choose freely within the number of commodities included. At the same time, inequalities of money incomes are prevented from interfering with the equity of the result.

In the case of a commodity, or group of commodities, like meat, which is available in many different qualities and grades, it is difficult to fix prices, either money or point, for each of them. The British have used a value rationing system for meat. Consumers receive the right to spend a given sum of money on meats, and they may spend it on whatever cuts or types of meat they wish. This system goes farthest in making use, within a given group of articles, of the price mechanism. Since the total purchasing power spendable on meat is limited and constant, the average price per pound of meat of all kinds can vary only as a function of variations in supply. As far as the relative prices of the different qualities are concerned, the prices of the choicer cuts will have a tendency to fall, and those of the lower qualities to rise, only limited adjustments in supplies being possible on account of largely fixed proportions.

RATIONING TO PREVENT INFLATION

The partial rationing systems briefly described above require considerable administrative effort for their success. In all cases, rigorous control over supplies is necessary to prevent leakages and the possible rise of black markets. The more general the system, the larger the number of commodities rationed, the more difficult the problem of organizing the required controls becomes. There are differences, however, depending on whether the increase in the number of rationed articles takes place by the introduction of additional specific rationing schemes or by the inclusion of new commodities in one ration, measured in points or in value. In the former event, more or less definite quantities of each article must be ready to satisfy the specific demand based on specific ration coupons. In the latter, some elasticity exists by the possibility of varying point prices in response to fluctuations in supplies of individual goods; while in the case of value rationing, the market itself, by variations in relative money prices, takes care of the necessary adjustments. On the other hand, the freedom of choice that point and value rationing systems offer to the individual consumer clearly diminishes the hardships that are involved in the specific separate rationing of the articles involved. In view of these circumstances, it seems likely that rationing systems, however specific at the outset, will slowly evolve into ever more comprehensive schemes for the regulation of whole groups of commodities.

As a natural development of partial rationing schemes for necessities, several proposals have been made for the rationing of large, and sometimes even all, sectors of consumer expenditure. Without going into the detail of the various suggestions, it may be pointed out that they are all designed to take the fullest possible advantage of the price mechanism, and in this respect, at least, are all essentially akin to the partial rationing system by value. These schemes all go very much farther than the mere intention of guaranteeing an equitable distribution of necessities. Their main purpose, in fact, is the prevention of inflation, the other great objective of the Government's domestic wartime policy. Fundamentally, the limitation of consumers' spending power by direct action, rather than through taxation or compulsory saving, is expected to have, with respect to the expenditure sectors covered, the same effect as the value rationing of meat in Great Britain, namely, to maintain the general level of prices while allowing relative prices to move freely.

The great simplification in administrative procedure which such proposals would make possible is undeniable. However, the shifts in relative prices which would result, especially in the case that the rationing is egalitarian, might easily assume undesirable proportions. The more equal the individual expenditure rations, the more would the prices of necessities increase, and the prices of luxuries decrease. To the extent that shifts in the employment of resources from the making of luxuries to the production of necessities are possible, the disturbance might be only temporary. But if, as is probable in wartime, the mobility of resources, especially of plant but also of labor, is reduced and perhaps practically eliminated, the effect upon the welfare of the community as a whole might be highly undesirable. Moreover, such profits as would arise in certain lines of industry on account of relative price movements would not only be unwelcome in themselves, but would fulfill no useful function in the war economy. If subsidies were introduced to prevent price increases for necessities, this would reduce the greatest advantage of the complete expenditure rationing schemes, namely, the simplification in administrative procedure.

FIXING THE INDIVIDUAL RATION

Whether specific or general, any rationing system requires a decision as to whether rations shall be equal per head, or whether differences in needs are to be taken into account. Egalitarian rationing has obvious advantages from an administrative point of view, but it may introduce serious inequity with many commodities. Equal per-head allotments, irrespective of age or any other consideration, may be acceptable for sugar, but clearly are not feasible for gasoline, fuel oil, or even coffee. Equal rations of commodities consumption of which decreases with increasing income discriminate against the poorer classes. Special allowances may also have to be introduced depending on the type of work performed by the individual. In Europe, extra food rations have been granted to heavy manual workers during the last and the present war. On the whole, the less specific the rationing scheme, the safer it is to ration equally.

The problem of how to allot a limited supply among different individuals becomes particularly serious in the event that general expenditure rationing is to be introduced. Complete equalization of expenditure, apart from the adverse effects upon supply conditions above noted, imposes very unequal sacrifices upon people in different income groups Both these undesirable consequences may be mitigated if expenditure in excess of a basic ration is subject to taxation at a progressive rate. This in fact was the proposal recently made by the Treasury.

LONG-RUN EFFECTS ON CONSUMPTION

Whether general expenditure rationing is adopted in this country or not, it is quite certain that wartime regulation of consumption will have profound effects upon consumers' habits and preferences. It would certainly not be surprising if, after a return to free market mechanisms, demand conditions were found to have undergone alterations even more appreciable than those observed during the great depression of the early thirties. It can be shown that, under identical conditions as to prices and income, consumers demanded, after the depression, considerably larger quantities of beef and cheese, and smaller quantities of pork and eggs. A wise compromise between the necessities of wartime supply and nutritional knowledge may do much, through the administration of rationing schemes during the war, to habituate consumers to utilize their incomes so as not only to please themselves but also to spend more rationally from a nutritional point of view.

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Production for Farm Home Use

By DAVID W. WATKINS

TEN years ago, one of the great promoters of dairying in the country remarked to a group that the large undeveloped outlet for dairy products in the United States was in the south—that here was a large fraction of the Nation's population that did not begin to consume the quota of milk, butter, and cheese needed for its health. A southerner present bluntly told him that he had better quit thinking of the south as an expanding market for northern dairy products; that the only way in which the south would be able to have milk, butter, and cheese would be to produce its own; that it could not afford to pay cash for more than it was then taking, this being especially true of the farm population.

This may be taken as a typical situation representing a good many rural areas in the United States, and a considerable list of animal products, fruits, and vegetables. Nevertheless, until recently at least, the trend has been generally in the other direction. As farming has become more commercial, the market has been depended upon for more of the family provisions.

The trend toward this sort of commercialism of agriculture began early—in fact, on the colonial tobacco farms of Virginia. One-crop tobacco and cotton farming early began to assume the pattern of modern one-crop plantation farming found nearly everywhere, whether it be sugar in Puerto Rico, pineapple in Hawaii, cocoa in Ecuador, rubber in Malaya, or sisal in Yucatan. The practice is to plant every available acre on the farm to the one cash crop, and then buy a poor diet of rice or some other cheap food at the least expensive source. With modern transportation, it has become possible to obtain these foods from distant regions, and to sell the plantation product on the other side of the globe.

Not without objection has this system developed. Hundreds of leaders in our own country have inveighed against it. Ralph Borsodi's book, *The Flight from the City*, falls easily in the pattern of many tens of thousands of printed pages of wishful writing on the theme of "back to the natural way of living and grow your own food." The most sustained effort to this end made in this country is to be credited to our Federal Department of Agriculture and allied southern state agencies, including especially the State Agricultural Extension Services. If there had never been a strongly felt need for more self-sufficient farming in our south, perhaps the Extension Service and its system of county agents never would have got started.

NEW FACTORS IN THE SITUATION

No doubt the efforts of the Extension Service met with some success on some farms, but not with enough success to offset the general trend. Recently a whole new set of government agencies has come to its aid, especially the Farm Security Administration with its program of "rehabilitation loans" to nearly a million low-income farmers, and the Agricultural Adjustment Administration and the Soil Conservation Service with their emphasis on forage crops, grazing, and livestock production. Still more recently has come the influence of the war, which is making it necessary for farmers to grow more of their own food and feed if they are to have it, and of the awakened interest in nutrition as an aid to better health. The information about nutrition is now in shape so that farm families can use it. They can work out farm and home plans in terms of "production for health" rather than of mere "subsistence."

While the family food interests of urban people lie chiefly in learning what to purchase for consumption and how to prepare it, farm people must learn not only what they should eat and how it should be prepared for the table, but also the art and science of production, processing, and preservation of the right foodstuffs in the right quantities. Moreover, the application of this art and science on American farms is quite different from operation of the same basic principles in a plant devoted to processing food on a mass basis. The work in such a plant starts with the acquisition of standardized farm products, which are then processed under conditions carefully controlled through superior facilities, equipment, and organization. Production for home use is accompanied more frequently than not by makeshift or inadequate facilities for harvesting, processing, and storing.

Getting any particular farm family to produce for home use is therefore a complex problem. Equipment must often be provided. An adequate diet supplies about forty chemical substances found in foods from varied plant and animal sources. Calories alone, and even proteins, carbohydrates, fats, and minerals alone, are not enough. The protective foods must be included for health. Many farms do not have suitable soils and other conditions for such varied production. Each of the varied types of crop and livestock production involved has its own separate set of sciences and skills. The profound effects of vagaries in weather and crop pests must be understood. With so many variables there can be no standardized program of such production for all farms.

FACTORS ENCOURAGING PRODUCTION FOR HOME USE

On the other hand, certain influences now operating strongly encourage farm production for home use. Among these influences the most important are mentioned in the following numbered paragraphs.

1. The continued disparity between the prices received by farmers for commodities produced for sale and the cost of things farmers buy has meant lowered farm incomes and a desire to save the cost of purchased items such as foodstuffs.

2. Meanwhile, the increasing knowledge of nutrition has stimulated the stimulators as well as the farm people to redoubled effort.

3. The innovation of crops new to individual farmers and of varieties recently improved by plant breeders has been an influence toward production for home use as well as for the market. For example, improvement in all the varieties of corn, wheat, barley, and oats has greatly stimulated the production of them for use on the home farm, even on farms and in regions which heretofore have taken little interest in such crops. A very definite increase in the acreage of soil-improving crops such as lespedeza, kudzu, and crotalaria, and of forage, grazing, and hay crops, spells greater production of animal products for family use in deficit areas. Likewise, the spread of disease-resistant varieties of sugar cane in the lower south makes for a greater production of sirup for farm use. Improved varieties of sweet potatoes, okra, and other vegetables are basic to this trend. Plant breeders, whether aiming mainly at commercial production or not, have played a very important role in developing varieties that are adapted to home use.

4. The particular wartime influences are: (*a*) the "goals" programs of farm

production promulgated through various Federal, state, and local agencies and farm organizations, these including considerable emphasis on gardens as a war measure; (*b*) transportation difficulties threatening the supplies of some foods; (*c*) impending high prices for some foods; (*d*) realization of growing food needs in connection with the lend-lease program and the food supply of our own armed forces. More home gardens are in evidence than at any previous time, and more home conservation of foods is under way among farm people.

SHARECROPPERS

Who in the north has not seen movie shots of the "cabins in the cotton" that are captioned as dotting the southern landscape? Many have no doubt also been told that the sharecroppers will not take care of gardens, cows, pigs, and chickens, and that is why cotton grows under the cabin eaves. It is therefore significant to observe that in recent years the best landlords have encouraged the families operating cropper units to produce, conserve, and use more of their own food supplies. The following is quoted from a report (Extension Circular 184) of a survey of 102 selected owner-sharecropper farms in 36 counties in South Carolina, made in 1939:

> Most landowners agreed that the dependence upon credit advances for practically all his living expenses is deeply ingrained in the typical sharecropper and that an intensive educational program is necessary to teach the importance of adequate diets, food production, and preparation for present and future use before much progress can be made in this direction. After the land is provided, an effective supplement to this teaching should include supervision in the growing of these products and in providing adequate storage facilities for food products grown. . . .
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> For those families unwilling to do the additional work required on gardens, definite systems have been worked out by the landowners to encourage the production of gardens and truck patches. In some instances supervision was extended to gardens and truck patches for individual families as in the case of the principal crops grown. On some farms a co-operative garden planted under the supervision of the owner or his representative was more satisfactory. . . .
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> In the production of livestock and livestock products by sharecropper families, provisions for supplying adequate feeds and pasture and sometimes certain classes of livestock are usually made by the landowner. On some farms definite practices have been established under which sharecropper families are required to have all, or at least one or more, of the three main classes of livestock used for food purposes, i.e., chickens, hogs, and cows. . . .
>
> The production of more food products by sharecroppers was reflected in lower credit advances by the landlord for living expenses. For those families not keeping cows, the credit advances per worker for living expenses were approximately 40 per cent higher than for those families keeping cows. For those families not keeping hogs the credit advances per worker for living expenses were 64 per cent higher than for all families.
>
> Furthermore, on a high proportion of the farms surveyed there exists between landowners and sharecroppers a spirit of full co-operation which is the result of definite planning for the entire farm. Under such planning both parties are jointly responsible for carrying out a complete and well-rounded farm program, which takes under consideration conservation of natural resources, improvement in diets, homes, grounds, and in other things which may affect the earnings or living conditions of these families.

This survey represents a sample of leading (not majority) thought found in most parts of the southern cotton and tobacco regions in 1939. This improving situation is one of the most hopeful developments in the better farm living movement.

THE EXTENSION SERVICE PROGRAM

Production for home use is now a war measure, and, as such, has been encouraged and aided by all Federal, state, and local agencies in the field of agriculture. Since responsibilities of the different agencies vary, the approach, the methods, and the results of each are pointed toward its own objectives. Groups such as state and county nutrition committees, and county and neighborhood volunteer farm leaders (called "minute men of agriculture" in some states), are also potent aids in helping locally to plan the farm production most suitable for home use.

The Cooperative Extension Service of the United States Department of Agriculture and the Land-Grant Colleges has emphasized production for home use in most states since its beginning. Through publications, meetings, demonstrations, farm visits, local planning committees, newspaper publicity, radio, exhibits, tours, circular letters, and demonstration sales, the Extension Service has made an unceasing effort, especially in the one-crop regions, to establish more production for home use. A few examples from representative states are given below.

In Louisiana more than 1,000,000 containers of food was conserved in 1941 over the amount conserved the previous year, and the value of farm-canned foods reported was $2,953,000.

The Texas Extension Service is teaching the use of refined cottonseed oil as an effective means of keeping cured meat properly. Texas farm families had 16,000 tons of home-grown food on their pantry shelves and in storage. This consisted of canned, fresh, stored, dried, and cured foods and foods placed in freezer lockers. A total of 72,150 farm gardens for out-of-season vegetable production were reported in 1941. Although 75,000 farm families were without milk cows in 1939, the figure had been reduced to 50,000 by 1941.

Ninety-four per cent of the farm families in Arkansas had gardens as a result of the emphasis placed on farm-produced food. About 20,000,000 quarts of vegetables, fruits, and meats were canned by members of home demonstration clubs and 4-H clubs. About 2,000,000 more quarts were canned by Negro families, along with 500,000 additional containers of jams, jellies, and relishes. Food storage problems were worked out on 30,629 farms, including 3,973 farm sweet potato storage houses with a total capacity of 1,242,000 bushels.

In Wisconsin 4,510 4-H club members grew vegetable gardens. Gardening was promoted in 25 counties at 111 meetings and through daily personal contacts. In 1,127 clubs 20,000 women members participated in discussions on better utilization of available foodstuffs.

In Missouri state-wide interest was aroused in building caves and cellars, storage rooms in basements, bins for vegetables, and shelves for farm-canned foods. Fruits, vegetables, and meats were canned for home use to the extent of 3,500,000 quarts by 20,000 farm families. Sixty thousand farm women and 6,500 4-H girls were taught skills in the homemaking of clothing.

In Mississippi 20,014 farm families followed poultry recommendations as to rearing, feeding, sanitation, and so forth. This work was conducted in 3,345 communities through 4,350 local leaders. Canning budgets for home use in 75 counties totaled 16,000,000 quarts of fruits, 206,000,000 quarts of vegetables, and 2,300,000 quarts of meat. A survey showed ownership and use of 35,626 pressure cookers.

Pledges were taken from white and Negro farm families in South Carolina to increase certain deficit food items. Reports from some 23,000 different.

families showed 7,470 of them raising 218,000 more head of poultry, 2,750 having added one or more cows, 6,280 having raised 16,290 more hogs for home use, 3,900 more growing sirup cane for family use, and larger numbers having increased their garden area of sweet potatoes or Irish potatoes. These may not seem like large increases to some readers; but if so, they do not know southern agriculture.

THE FARM SECURITY ADMINISTRATION

The Farm Security Administration under the Bankhead-Jones farm purchase program has aided 20,721 farm families to secure farms at 3 per cent interest in the first four years of this program. On 97 per cent of these farms, house building or repair work was done at the beginning. On these farms supervisory work was maintained which, in addition to looking out for cash incomes, had families produce their own needed food supplies, including vegetables, fruits, poultry and eggs, milk, and pork. The effect was to add materially to the gross incomes and thus to the net incomes of those families, while promoting the health and welfare of all members of those families.

As an illustration of the work of the FSA with rehabilitation borrowers (not farm purchasers), some 80,000 of them in four southeastern states were given supplemental loans averaging $80 each for increasing poultry flocks by fifty chickens and acquiring one more brood sow or two more milk cows. This program was carried through the year and resulted in a much more plentiful food supply on these farms, besides providing considerable surpluses for sale off the farms. The average value of goods produced for home use on farms of FSA borrowers increased from $163 for the year before they entered the program to $264 in the year 1940. In that year they produced per family an average of 391 gallons of milk, 391 pounds of meat, and 266 quarts of canned fruits and vegetables for home use. Under the impact of growing defense needs and now of war, these families are materially stepping up production for farm use.

What contribution the FSA program has made to the better health of these families would be interesting to know. In a group of selected counties, the local physicians are collaborating with the FSA in making a survey of the health and nutrition of the FSA borrowers and other low-income families, and the results of this survey will begin to be available in a few months.

OTHER AGENCIES

The Agricultural Marketing Administration has promoted consuming habits through supplying commodities for school lunches, for the stamp program, and for direct relief, which tend to stimulate production for farm use. This happens in two ways. First, the fact that AMA moves surpluses off of farms into consumption gives farmers a feeling of assurance in production which tends to lead them into more production of foodstuffs, therefore having more available for farm use. Second, many of the people receiving the benefits of school lunches and stamp plan and relief commodities are farm people, who, as they become habituated to the consumption of such farm products as milk or local fruits and vegetables, will carry over a part of such habits into farm production activities.

Although the Agricultural Adjustment Administration has production for war purposes as its main objective, its program has stimulated production for home use. Farm gardens are directly subsidized, as are pasture improvement and better forestry practices. Where staple crops are under control, more attention is usually centered on crops for use on the home farm.

The cotton mattress program, while not directly part of the food effort, has contributed to it in several ways. About four million mattresses have been made. This was a co-operative activity between AAA and the Extension Service. The AAA passed upon the recipients and delivered the cotton, and the Extension Service organized and instructed people in local centers for this work. It has of course been discontinued since the war started.

The Soil Conservation Service is engaged in promoting farm activities which lead to more production for farm use. Strip cropping with larger acreages in lespedeza and other crops means soil saving and greater production of feedstuffs. This in turn means greater production of meat, milk, eggs, and food crops.

In the Great Plains region many thousands of farm families are now able to have home-produced fresh vegetables for the first time, because the SCS or the agency working in collaboration with the Water Facilities Program and the FSA has been able to provide a water supply for irrigation of small gardens. Sometimes it is a windmill that supplies the water; sometimes a small reservoir that impounds run-off water behind an earthen dam in a small valley near the house; and occasionally some small-scale irrigation development. These gardens growing in the seepage below the dams are a sight to gladden the eyes of any nutritionist who knows the vitamin problems of the families in the great open spaces. Equally stirring are the occasional rows of wild plum trees and other native fruits that one sees planted for protection in the Shelter Belt strips.

The Vocational Agricultural teachers are also making their particular kind of contribution to production for home use. One activity consists of supervising small local canneries where farm families can surpluses for home use.

Regional and nongovernmental programs to promote production for farm use have been under way in several places, perhaps the most notable being the "Plant-to-Prosper" campaign sponsored by a Memphis newspaper, covering several states.

Governors of several states, including Tennessee, South Carolina, and North Carolina, issue certificates in co-operation with State Extension Services, Vocational Agricultural Departments, and local farm committees, to families achieving the production of at least 75 per cent of a standard food supply for themselves. Usually about 20 to 25 per cent of the families enrolling in the spring of the year succeed in winning certificates. In Tennessee in 1941 60,000 certificates were awarded, and in South Carolina 5,000.

LOOKING AHEAD

The foregoing exhibit leaves little room to doubt that production for family use is receiving more attention today than ever before in the Nation's history. Part of this is a war measure, but more of it represents a long-term agricultural program that was well underway by 1940. What will the end of the war mean to this program? The opinion is general that farm labor will be scarce and that agriculture will become more mechanized as soon as farm machinery becomes available again. This need not spell the doom of the family-sized farm, but it will do so unless the family-sized farm becomes enough larger to provide economical use of the small power units that seem likely to be developed. Will these larger family farms be more commercial and go back to the market for more feed and food? This surely is one possibility. But another is that the greater ease with which the farm work is done will leave more time for the fuller and more abundant life on the farm, which means more production for home use, better nutrition, and more health.

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The Food Distribution Programs of the Agricultural Marketing Administration

By Frederick V. Waugh

THE Agricultural Marketing Administration operates a wide variety of programs affecting the distribution of foods. These include, for example, purchases for lend-lease, diversion to export markets or to low-priced uses in the United States, the provision of such services as inspection and market news, and the enforcement of several fair-trade-practice laws. All these distribution programs have some bearing on the domestic nutrition problem insofar as they affect the total quantity of foods available for domestic consumption, and insofar as they affect the efficiency of marketing. But we shall be concerned here only with those programs which directly affect the proportions of the food supply available to undernourished people in the United States.

Development of Programs

These programs in the Department of Agriculture have always been aimed at dual objectives: (1) to remove price-depressing surpluses from the regular market, thus raising farmers' incomes; and (2) to make these surpluses available to low-income families and to school children, thus improving the diets of participating groups.

From 1933 to August 1935, purchases of foods and clothing for distribution to needy families were handled by the Federal Emergency Relief Administration, but on several occasions the program of that agency was closely co-ordinated with those operated by the Department of Agriculture. For example, the FERA distributed some of the hog products obtained from the emergency slaughter of surplus pigs and sows in 1933. Also, the Department of Agriculture advanced funds to the FERA to purchase dairy and beef products.

In August 1935 authority was given to the Department of Agriculture to

> encourage the domestic consumption of such [i.e., agricultural] commodities or products by diverting them, by the payment of benefits or indemnities or by other means, from the normal channels of trade and commerce or by increasing their utilization through benefits, indemnities, donations, or by other means, among persons in low-income groups as determined by the Secretary of Agriculture.[1]

To finance these programs the law provides that 30 per cent of the customs revenue is to be made available to the Department.

Under this authority, the Department proceeded to develop its own program for buying surpluses and making them available to state welfare agencies. In the early years the emphasis was entirely on relieving critical situations of extremely low prices at the farm. The distribution programs simply offered a convenient outlet for dumping these surpluses and for bolstering prices for the rest of the supply. At that time no attempt was made to provide satisfactory diets to those who were eligible to receive the surplus foods.

However, after a few years of experience with these early distribution programs, two things became clear: (1) that much larger and more balanced programs were needed to provide adequate diets to the millions of families who were undernourished, and (2) that a better and larger nutrition program might offer one of the most effective methods of raising the incomes of farmers. In 1938 and 1939 a number of people in the Department became interested in developing a program to give as much and as effective help as possible both to undernourished consumers and to underpaid farmers. Former Secretary Wallace was particularly interested in the possibilities of such a program.

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[1] Public, No. 320, 74th Cong, Section 32.

For a time there was a great deal of discussion of a possible "two-price system"; low prices to low-income families and higher prices to others. Some of this discussion became rather heated, and much of it was beside the mark. A committee within the Department worked out several alternative proposals, including the basic ideas which are now embodied in the food stamp program and the school lunch program. In February 1939 Mr. Milo Perkins became Administrator of the Surplus Marketing Administration and began immediately to develop an active and greatly expanded program of surplus disposal and nutrition.

From 1939 to date, these programs have grown rapidly. Their place in the war situation and in the postwar economy will be discussed later. First we shall briefly describe each of the principal surplus-disposal-nutrition programs now operated by the Agricultural Marketing Administration. (The Surplus Marketing Administration was combined with other agencies in February 1942 to form the Agricultural Marketing Administration under the direction of Mr. Roy F. Hendrickson.)

DESCRIPTION OF PROGRAMS

The oldest program is the one commonly called the direct purchase and distribution program. When a surplus drives down the price in some area the AMA sends one or more representatives to that area to buy directly from farmers or dealers. Arrangements are made for the commodities to be processed, packaged, stored if necessary, and transported to the points where they are turned over to state welfare agencies. These state agencies are responsible for distributing the foods to low-income families. The distribution is usually done through food depots. Eligible families go to these depots at stated times and are given whatever surpluses are available.

Another, and a growing, outlet for direct purchases is the school lunch program. School lunches have had a long and varied career, both in the United States and in many foreign countries. Until the efforts of local groups were supplemented and co-ordinated through the Department of Agriculture, progress was slow and spotty. At present the AMA is donating foods for properly organized school lunches throughout the country. Purchases for the school lunches are combined with those for direct distribution to families. To be eligible to receive these foods, the local sponsors must agree to abide by certain rules and regulations set up by the AMA. The intent is for the AMA to supply free of charge only certain basic articles of food, and for the local agencies to supplement these with other foods to make a balanced lunch. No charge can be made for the lunches to children who are unable to pay, and if some of the children pay for the lunches there must be no distinction between those who pay and those who do not. Wherever possible, the lunches are continued during the summer vacation period through feeding programs at playgrounds and camps.

The school milk program, popularly called the penny milk program, supplements the school lunches. The AMA contracts with local sponsors to supply milk to be sold to school children at one cent a half-pint. The AMA pays the established producer price for Class I milk. The local sponsor pays all other charges, such as those for bottling, pasteurization, and delivery. The pennies collected for the milk help to defray these costs of the local sponsors.

The food stamp program is more complicated, but has attracted a great deal of attention, and probably the general outlines are fairly well known. State and local relief agencies certify public assistance families as being eligible to participate in the stamp program. These families are allowed to buy orange-colored stamps which can be used to buy any kind of foods in any retail food store. Any family buying orange-colored stamps is given free of charge a certain number of blue stamps which can be exchanged for those foods which are listed by the Secretary of Agriculture. Minimum and maximum limits are set for the purchase of the orange stamps. These minimums and maximums vary as between different cities and as between different groups of relief and low-income families, but the intent of the minimums is to require participants to continue purchasing as much food as before, so that the blue-stamp foods will be net additions to their diets; while the maximums are intended to prevent buying large amounts of food for resale. The items on the blue-stamp list have been chosen with several objects in mind. Emphasis is given to those foods which are most plentiful and cheap; to those most needed in the diets of low-income families; and to those requiring little expense for processing, manufacturing, and packaging. The retailer turns his stamps back to the Government and is reimbursed in full for them.

Finally, in a few cities[2] the AMA has programs to enable low-income families to buy milk at less than the regular market prices. Substantial reductions in price have been made. Eligible families are now buying milk at from 4 cents to 6 cents a quart under these programs. This is only one-third to one-half the regular delivered price. The reduction in prices is accomplished by a combination of three things: (1) the milk producer is paid less than the Class I (fluid milk) price, but more than the Class II (surplus) price; (2) the dealers handle the milk at a greatly reduced margin, made possible in most cases by reducing or eliminating such costs as delivery; and (3) the balance of the reduction in price is made up by payments from the AMA. In most cases the milk is sold through depots (in retail stores in New York City).

SIZE OF THE PROGRAMS

Table 1 shows the cost of each of these programs to the AMA for the fiscal year 1941–42.

TABLE 1—COST OF AMA PROGRAMS

(In million dollars)

Blue Food Stamps	111 6
Direct Distribution to Families	26.1
School Lunches	21 9
Low Cost Milk to Families	2.4
School Milk	1.5
Total Cost to AMA	163.5

The total cost of $163,500,000 for these programs in the fiscal year 1941–42 compares with a total cash income (including Government payments) to farmers of $14,295,000,000 in the same period. Thus, if the entire $163,500,000 had been used in buying the foods at the farm, it would have represented only a little over 1 per cent of the value of farm products as a whole. Also, it may be noted that these programs involve much smaller purchases of food than do the current lend-lease operations, which are now at a rate approximating one and one-half billion dollars a year.

In July 1942 the food stamp program

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[2] Manchester (N. H.), Boston, New York, Chicago, New Orleans, and St. Louis.

was reaching 2,600,000 persons, and direct distribution to families (and institutions) was reaching 2,600,000 persons. This, of course, was a low period for the school programs. If we go back to March 1942, we find that the school lunch program was reaching 6,200,000 children, and 700,000 children were getting milk in schools. If we compare the size of these programs in recent years with the needs of a program both to move farm surpluses and to feed undernourished families, it is quite clear that they are far from adequate. At the present time there are few important surpluses of farm commodities, and there are also a smaller number of low-income families. This situation will be discussed more fully in the following section of the paper.

Looking back over the years from 1933 to the early part of 1941, it is fairly clear that we should have needed a much larger program either to handle the farm surplus situation adequately or to make an adequate contribution to the diets of undernourished families. Some tentative estimates have been made of the size of the programs which would have been required to do this job. They indicate roughly a budget of from 400 million to 500 million dollars a year.

RELATION TO THE WAR SITUATION

These food distribution programs were developed during the period when huge surpluses of foods hung over the market and when large numbers of industrial workers were unemployed and relief rolls were very large. We were confronted with the striking dilemma of want and hunger in the midst of plenty. The very fact that millions of families were unable to buy enough food restricted the market for the farmers' products and was a major factor in depressing food prices and farmers' incomes. As we have already indicated, the first small experiments with these distribution programs were looked upon by many agricultural people mainly as a rather convenient way of dumping surpluses in order to raise prices from the extremely low levels which existed. Later, and particularly since 1939, increasing emphasis has been given to supplying the foods most needed by low-income families.

Now the situation is quite different. Now that we require huge quantities of food for military purposes and for lend-lease shipments, we are beginning to worry about possible food shortages rather than food surpluses. Our problem is no longer to raise the general level of food prices. In fact, we have found it necessary to impose ceiling prices on many foods, and doubtless will have such ceilings on additional foods before long. From the standpoint of nutrition, we must also recognize that there has been a substantial increase in employment and in the level of wages and therefore in the purchasing power of many families. The number of families on relief rolls has decreased substantially during the past year.

Yet there continues to be a decided need for a nutrition program during the war. In spite of the drop in relief rolls, it is important to remember that there still are close to ten million persons in families on relief rolls in this country. Many of them still are not being reached by the AMA distribution programs. Many of them are worse off now than they have been for several years, since relief payments have not increased as much as the rise in the cost of living, and food costs especially have mounted. Present indications are that relief rolls are not likely to decline much below the present levels. They include many unemployables—elderly people, for example, who are supporting themselves on fixed and inadequate incomes, and those with serious physical defects—and they include some persons who have been thrown out of employment by industrial changes brought about by the war. These people must have some help if they are to get adequate diets.

Moreover, the war has focused the attention of the public on the seriousness of the nutrition situation and on the need for building a stronger nation through providing more adequate food, particularly to school children.

Neither should we assume that all agricultural surplus problems have been eliminated for the duration of the war. We were confronted with some national food surpluses and with several local food surpluses in 1942, and we shall doubtless have to meet some difficult surplus situations as the war progresses. The output of American farms is being stepped up to meet production goals. These goals should be set high enough to meet the requirements of domestic consumers, the needs of our armed forces, and the needs for lend-lease purposes. It will be difficult in many cases to reach the goals which fully cover these requirements. The greatest difficulties will not be on the farm, but in processing, transporting, storing, distributing, and shipping.

The egg situation in the southeastern states in the spring of 1942 is an illustration of what may happen on a much larger scale during the war. The Department of Agriculture asked for increased egg production. Farmers throughout the south responded by making substantial increases, and then found in many cases that their local markets were unable to handle them. Prices in some of these local markets went as low as 10 to 15 cents a dozen. It was necessary to develop quickly a special program for taking care of these local surpluses.

Rationing

So far, we have had little experience in this country with food rationing. We shall probably have plenty of experience with it before the war is over.

It would be very desirable for food rationing to be accompanied by some form of Government food distribution program to assure all families not only of the right but also of the ability to buy the necessary minimum amounts of basic foods. The food stamp program could probably be easily adapted for this purpose, or it might be possible, instead of giving away ration books, to sell to each family books of stamps or coupons to be used in obtaining the rationed foods at retail stores. Such books of stamps or coupons could easily be sold to low-income families at reduced prices. In fact, it might be possible to establish several different levels of prices for such books, depending upon the ability of each family to pay for them.

Food rationing in England has gone a long way toward equalizing amounts of food consumed by different income groups. It has lowered the consumption of many foods by the higher income groups, but at the same time has made it possible for the lowest income groups to get substantially more and better foods than they have ever had before. Without question, this is making an important contribution to nutrition in England. We probably should go toward this same goal in the United States, at least during the period of the war.

SOME IMPLICATIONS OF GOVERNMENT FOOD DISTRIBUTION PROGRAMS

During the war the public is likely to accept almost any regulations of food prices, rationing, or distribution which seem necessary in order for us and for our allies to be as effective as possible. There is, of course, less agreement concerning the place of government food distribution in a permanent peacetime program. The experience with AMA food distribution programs to date suggests several implications concerning their possible use and extension in normal times.

The public is becoming aware that many families are underfed and that there is need for an active nutrition program to safeguard the health and well-being of our population. Some of the AMA programs have demonstrated that they can help effectively to meet this problem. However, they will have to be conducted on a much larger scale if they are to provide a reasonably adequate diet for all low-income families.

The income of farmers can be raised and at least partially stabilized by programs of this kind. In fact, Government funds spent on these programs are probably one of the most effective methods of farm relief. They not only help to raise and stabilize prices of food, but they also increase the outlet for the farmers' products. By helping to raise both volume and price, they benefit the farmer in two ways.

The fact that farm income can be raised by diverting part of the food supply to low-income groups raises some real doubts about the principle of "orderly" marketing, as that principle is usually described in textbooks. As most textbooks use the term, orderly marketing would mean the practice of distributing and using a given volume of food in such a way that the same net prices would be obtained for each unit; in other words, the kind of distribution and use which would result from universal and perfect competition. Whatever else may be said for this kind of distribution, it seldom if ever results in maximum net income to the producer.[3] The greatest income from a given volume is obtained by distributing it so as to equalize net marginal returns—not net prices.

The amount of monetary gain to the farmer in AMA programs depends essentially upon three things: first, upon size of programs, and we have already indicated that they have not been big enough in the past to make very substantial increases in farm income; second, upon the amount of "substitution," that is, the extent to which participating families reduce their purchases of food and substitute foods provided by these programs; and, third, upon the elasticity of demand. One of the principal merits of the food stamp program is that it attempts to prevent substitution, and requires that participating families continue to spend as much money for food as before, so that the blue stamp purchases will be net increases in consumption.

The school lunch program is an attempt to go even farther, and require local sponsors to supplement the AMA foods by additional items necessary to provide a balanced lunch. The low-cost milk programs represent real two-price arrangements. Producers can gain substantially from any such arrangement whenever the demand in the low-price market is more elastic (or less inelastic) than in the higher-price market.

Eligibility

If government food distribution becomes an important part of the permanent program, one of the important and difficult questions will be that of eligibility of different categories of families. As yet we have not effectively met the problem of taking care of low-income families who have not been made eligible or who do not participate for one reason or another. To the extent that these programs raise food prices, the burden may fall rather heavily on whatever low-income families do not participate. Probably eligibility should not depend solely on income. For example, special attention needs to be given to infants and children. Probably free school lunches should be extended to all school children, regardless of the income status of their parents. There seems to be just as good reason for providing free milk or lunches to all school children as there is for providing free textbooks to all school children.

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[3] Frederick V. Waugh, Edgar L. Burtis, and A. F. Wolf, "The Controlled Distribution of a Crop Among Independent Markets," *Quarterly Journal of Economics*, Nov. 1936.

Private industry

A major issue in any such program will be its relation to private industry. In its direct distribution program the AMA buys surpluses and distributes them to state welfare agencies who make them available directly to participating families. In this case the entire distribution problem is handled by public agencies, and foods move entirely outside the ordinary trade channels. At the other extreme, the food stamp program operates entirely through established trade, and government agencies never actually buy the food. Between, there are such programs as the low-cost milk arrangement, in which part of the processing and distribution job is done by private industry and part by public agencies. In this case, too, it has been possible to arrange with dealers to have the milk handled at lower costs. It may be possible in the long run to develop distribution programs in which government and private industry will co-operate to do the job much more efficiently than it is now being done by any of the present programs.

Objectives

Another important issue will be the extent to which we are concerned with a general food plan, or the extent to which we are concerned with moving specific products. The direct purchase and distribution programs have proved in many cases a very effective way of taking specific surpluses off the market and getting them consumed. The food stamp program as it has operated thus far is a less effective device for doing this job, particularly when a large number of foods is put on the blue stamp list. It seems quite possible to develop a food distribution plan that will do both things effectively. It certainly is very desirable to have a program which will increase the total amounts of food consumed by low-income families, but it is also very desirable to be able to direct these increases along specific lines. A case in point at the present time is soybean and peanut flour. The production of these high-protein foods for human consumption could be increased very substantially at a time when our domestic meat supplies are short. We need practical devices for adjusting consumption to meet situations of this kind, and government distribution programs may be one of the best ways.

It is hard to picture the postwar economic situation, but some fairly drastic readjustments in agriculture seem certain. The long-time trends in American agriculture probably must be away from export crops toward those foods which are most needed in the diets of our own people. Government food distribution programs can help a great deal in bringing about such adjustments. Many farmers in the south, for example, will be quite willing to shift from cotton production to food production when and if a satisfactory market is available to them.

As yet there has been little consideration of the possibility of applying to international trade the same kind of programs with which we have been experimenting within this country. As we indicated earlier, these distribution programs will be in a very real sense a form of dumping. Instead of dumping in the export markets, we have been experimenting with dumping surpluses in the low-income market in the United States. There would seem to be real possibilities in some form of reciprocal export dumping in which two or more countries would agree to exchange surpluses and to keep them out of the regular channels of trade, using them for such purposes as school lunches and programs to improve the diets of low-income families.

Use of resources

Finally, all these programs raise questions about one of the oldest problems in political economy—that of making the best use of resources. According to the doctrines of the classical economists, the best use of resources was that resulting from competitive forces acting freely through market prices. The validity of this doctrine seems very questionable in the light of modern conditions. It hardly seems like good use of resources to let a surplus of citrus fruit rot, resulting in a total loss to the farmer, while millions of families need it badly. Moreover, from the long-time point of view it is becoming increasingly clear that we need a positive program for speeding up adjustments in production and helping to direct the use of resources to the most necessary purposes.

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American Supply of Foods to Combat Areas

By John B. Canning

THE first step toward understanding the problem of feeding people in combat areas is to divorce it from most of our familiar ideas about food supply operations in peacetime. Economists' charts of peacetime per capita food consumption have made us all familiar with the characteristic changes in the latter —with the monotonously rounded ripples of seasons riding upon the lazy ground swells of cycles sliding up or down sluggishly moving trends. Those responsible for feeding in combat areas are beset by the imperative necessity to bring about overnight changes in many variable characteristics of their service. The changes in direction are sharp, frequent, and erratic: they vault and plummet in amplitude. The two systems of changes—one a part of peace, the other a part of warfare—resemble each other no more than do war and peace in their entireties.

The transition from one supply service to the other, however well planned, requires change in organization, personnel, and equipment in phase with the successive stages of change from peacetime to actual warfare operations. Thereafter further changes are imposed by the weight and locale of the onset and in phase with the progress of campaigns. The actual operations at any time are endlessly varied and intricate, and these, in turn, are subject to swift change in response to changes in battle fortune. For example, the Allied loss of edible oil sources with the loss of the southwest Pacific forced changes in the actual foods in all of our combat areas, and in turn, changes in crop plans of millions of American farmers. From beginning to end of the change of operations this whole branch of warfare is subject to the protean changes of impact of other war work. Perhaps the most intractable of all problems of changing battle-zone feeding is that imposed by the changing identity, status, and agreements among allied nations with respect to pooling combat-zone food resources.

The very character and magnitude of such changes—whether initiated as part of an offensive or borne as a result of a setback—suggest a second step toward understanding. It is never easy to make great sudden changes. The absence of initiative or the failure to anticipate or swiftly to counter an enemy's move is far more likely to be a mark of incompetence than is the apparent wastefulness (by peacetime standards) of bold measures that may have to be reversed before they are fully carried out.

INTERDEPENDENCE OF WARFARE BRANCHES

The third great step toward understanding arises from the interdependence of the several branches of warfare for success of the whole and the dependence of each on the resources of the country. For an expeditionary force to be backed by six months' reserves of arms and ammunition and six days' reserves of foods is as bad as the reversed ratios would be. In either case, an alert enemy, by throwing his whole force against the weakest branch, could win the campaign in six days. For the Japanese to restrict their field forces to the number they could supply with the United States Army diet would be no more stupid than it would be for us to adopt their field service foods. It would be a gross blunder for us to send our training camp food to our overseas forces, for the sheer bulk, weight, and perishability of it would, with limited shipping, require us to send too few men. It would be no less of a blunder to feed our troops at home with battle-zone diets, for such a diversion would defer the beginnings of effective combat until our manufacturing facilities for specialized battle-zone foods could increase far beyond battle-zone requirements.

Despite a 5 or 10 per cent spoilage, it was bold wisdom for us to send shell eggs for the British forces when we had no dried eggs to send. Now it would be silly to ship any but powdered eggs, for we can lay down ten times as much egg food per unit of ship space, and all of it arrives in good condition.

Failure to take full account of all concurrent circumstances in every branch of warfare everywhere is as fatal to understanding and appraisal of combat area food supply operations as the like neglect by responsible officers would be to the success of the warfare in its entirety. It is difficult even to identify gross failures in such a service or even reliably to infer their absence. One can no more assay the relative contribution of each branch component of warfare to the compounded result than one can assign nice numerical credits for the health we enjoy to the air we breathe, the food we eat, and the clothes we wear.

Warfare values

Nevertheless, there is a scale of values upon which the whole of warfare can be weighed. Success or failure, in the end result, always turns on casualties. The side that destroys its enemy's armed forces before its own are irrecoverably defeated is the winner. Nothing else counts. Contribution to the balance of such a result by feeding in theaters of operation is an art only—not a science. For relative contribution of each particular program in each branch, there is little but intuition to rely on.

BASIS OF LIMITATIONS

The space allotted to this article exposes it to the half-truths of arbitrary scope restriction. The notions expressed above are put forward less for their special merits than to suggest that some such frame of reference is necessary both to management of the service and to understanding of the subject. The remainder of the article will be devoted to those particular features of the problem that seem most stable or most likely to come about. Within this, emphasis will be restricted to the American overseas contribution, but no attempt will be made to distinguish between feeding our own forces and those of our allies, or even between feeding these and provision for those civilians who share the combat areas.

SELECTION OF FOODS

In the physical cost accounts of combat area feeding, a sharp, clear line separates the credits from the debits. All the credits, the favorable positive items, occur after the foods are eaten. They consist only of nutrition.[1] All the debits, the adverse negative items, mature before that stage and consist exclusively of work that has to be done to complete the diet and to sustain its rationing.

In this, as in other accounts, it is the balances—not the footings—that measure the success of management. Selection on the basis of nutritional characteristics alone is as grave a military fault as selection solely with respect to human labor costs. The military characteristics of foods, item by item, consist of both positive and negative variable components.

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[1] In this paper "nutrition" and its derivatives refer only to the sequelae of eating, and include all such physiological and psychological variables. To preserve the intended distinction, "diet" refers to the constitution of items eaten, and "ration" to a daily rate of eating.

On the nutritional side there is a great range of relative merits. Foods are body-engine fuels. As with other engines, the primary military concern is for military work done—not for crude energy values in the fuels. From a military point of view, calories per unit weight, once the best index we had, is no better guide to food selection than is mere weight of the single projectile to the selection of firearms. Blends of foods with high proportions of animal proteins, of certain edible fats and oils, of a few complex salts of iron, calcium, and phosphorus, and of a large number of vitamins can make a soldier vastly more efficient in battle than can a diet of equal calorie value if it is high in inert starches and sugars. This principle of selection is identical with that of high-octane gasoline for airplane engines. Unit for unit, both such fine fuels give soldiers a better chance of surviving the actions in which they destroy their enemies.

Energy losses and labor costs

On the negative side, the same analogy holds. In mere heat-producing value (calories), a gallon of 100-octane gasoline is far below that of the aggregate of raw materials drawn on for its manufacture. The refining and blending require far more human work than do the less refined fuels that can be made from the same source materials. So also with the high efficiency food blends. Much heat energy vanishes in the processes whereby plants make starches, sugars, crude oils, crude proteins, and other low-order nutrients. Further refining in the bodies of meat animals, dairy cows, and poultry uses still more. The management of all these more thorough refining and blending processes requires far more human work per mere calorie than do cereal foodstuffs.

Every one of the food materials necessary to a high efficiency blend—especially in their more attractive peacetime forms—is still cursed with gross military flaws. Raw milk from Wisconsin can be served in Chicago but not in Leningrad. The bones in Iowa hogs are not hard to ship to New York, but cost lives and ships if sent to London. The nutritional values of a carrot are all contained in a tiny fraction of its weight and bulk. There is no merit in fighting an air-and-sea battle over a five-thousand-mile voyage to defend the skins on potatoes to furnish kitchen police duty for battle-weary privates. To eliminate the water and other inert materials by dehydration and other manufacturing, to preserve against spoilage under field operating conditions, to pack in ways that permit landing through surf in the dark and under enemy fire, to do as much as possible of the culinary work at home rather than in battles overseas—all these are literally war work.

American advantages

The sample bits of the art of military food selection just noted are put forward to suggest the myriad of particular difficulties, but not to mask the appropriate resolution in the mass. In the primary materials for the best food blend we have vastly greater resources than our enemies. We are far better able than our enemies to transform our food processing to this end. It would be a sin against our soldiers and sailors not to use that resource as a major weapon. Without damage to our civilian population in its war work, we can feed our soldiers better than their enemies are fed. We can energize the diets of Allied armies by sending the foodstuffs in which their diet blends are most deficient. We can help out in the same way with their civilian diets. Once actually ready for shipment in the best shipping forms, these best blend foods are far easier to deliver than their bulkier peacetime forms or even than the cruder forms of foods to which our enemies are restricted; this, because, for a given nutritional result and for a given battle result, these best blend foods require less weight, less bulk, less ship metal, less escort duty, smaller field supply trains, less field cooking apparatus, and less kitchen police work afield.

Those responsible for food selection, procurement, and shipment will have an opportunity to exploit a vast selection advantage—an advantage so great that judgment of their performance by the standards of progress in peacetime food technology could give only a totally false appraisal. On their part, only the boldness and fury of change appropriate to war can furnish a proper yardstick.

DELIVERY TIMING

For readers of THE ANNALS it is not necessary to dwell on the shipload-by-shipload difficulties of delivering foodstuffs in combat areas. Thus far, the timing of our combat food supply in relation to the rest of our war effort is its most important feature, and perhaps the best managed. With respect to the European theater, nearly all our actual fighting has been done in effecting deliveries. To be sure, great quantities of arms and war machines have been delivered concurrently. But neither in our hands nor in those of our allies have those arms and machines written many of their original entries in the journal of war accounts. By contrast, most of our foods have their entries posted to the final footings and balances in the ledger. In answer to immediate nutritional needs, our foods did immediate battle-area service—service both to our allies and to us.

We are on the verge of another great phase of food movement timing. Somewhere and soon—whether by our own initiative or to counter an enemy campaign—American forces will go into combat in great numbers and with full striking power. To match that future combat certainty there is an earlier food supply certainty. Great armies operating far from their shores require great food supply reserves in their immediate rear. Such supplies have to be moved as far forward as possible before the great surge of troops moves into direct and continuing enemy contact. During the expansion of these advanced base reserves there must be not only a continuing hand-to-mouth supply to our allies, but also creation of reserve stores for them. Only thus can we become able at the earliest possible moment to concentrate sufficient ship use on actual troop movements and on final water jump of supplies from advanced bases to the new land contact areas.

Comparative timing

Such timing on the grand scale, both of our earlier start and of the move to come, illustrates the interdependence of the branches of warfare. Driving the enemy out of the seas and the air over them, and the building of ships, are necessary to increase in tonnage afloat. While the tonnage resultant is growing, supplies and supply guards must be shoved to advanced bases. Only when both jobs are done can a major movement of troops be most effective. It can hardly be doubted that much of the desperate use of Axis reserves in the onslaught at Stalingrad and in the Caucasus, and that the daily RAF bombing of German submarine yards, marine engine factories, and long-range bomber plants, are all of one piece of warfare with the next great phase of food delivery timing. Only against such a reference background can food supply deliveries be seen as a whole.

ORGANIZATION AND PROCEDURE

Our organization and procedure in food supply to combat areas have kept pace and phase with those in the rest of our national transition to a war footing. There was the same sparring for position and formulation of defense policy among the great economic groups whose spokesmen were seated in the Advisory Commission to the Council of National Defense. On these beginnings, exploratory organization and bits of production were founded in the days of the Office of Production Management and the Office of Agricultural Defense Relations. With the coming of the Lend-Lease Administration and the Supply Priorities and Allocations Board and with the Department of Agriculture's April 1941 programs, serious production for war began to make its weight felt.

Up to that point, nearly all economic responses took the form of simultaneous war preparation and increasing volumes of operation of the familiar peacetime sorts. Not until after Pearl Harbor did the newly created War Production Board grapple seriously with the problem of conversion from nonessential operations to war-needs industry. Although the Department of Agriculture very greatly expanded its crop plans in September 1941 to provide margin for greater lend-lease shipments, it too took serious account of requirements for an overseas war only in its revised crop plans promulgated in January 1942. Measures for the conservation of critical food materials and for the conversion of vegetable and milk canneries to dehydration plants afford a parallel to the lagging programs for conserving rubber and tin and creating facilities to provide substitutes.

As already noted, the total effort toward combat-area food supply was the earliest to make its weight felt in actual warfare. It is also true that the Department of Agriculture was the first to start simultaneous and co-ordinate increases in production at the extractive level and in procurement of end products. Only in recent months have overseas movements of foods by the War and Navy Departments assumed large proportions, but neither Department promotes supply at the extractive level.

Both in the combat-zone food supply service and in other branches of war supply, each new organization was preceded by rising clamor of comment. With each move, there followed an interval in which the new organization and procedures were regarded as adequate. None of these intervals lasted long. The changes in organization and procedure clearly occurred because the phase for which they were created was completed. There is still no reason for expecting that the latest, or even the next following, phase will be the last.

Just now it is clear that, in broad outline, we are still in the conversion and production-increase phase of overseas food supplies. There can be no doubt that the governing organizations and their programs give predominance to converting and to augmenting producing for war—just as is true of the other supply branches.

Changes not ended

There is little risk in predicting that this phase is drawing to a close and that present organizations and programs will be displaced by the work of over-all organizations for the conduct of war—for the actual waging of warfare. Sooner or lated, by bold initiative or by enemy compulsion, that phase comes to every nation that wins a great war. The arms-producing organization ceases to be master and becomes the servant of a war chief or a war council.

Swiftly to bring about a maximum *rate of increase* in arms and food producing did require the full dominant authority delegated by the President, but the management of the production itself, once the maximum rates are attained, does not. Dominant authority, sooner or later, must pass to those who direct the force of those products against the enemy—a totally different job. There is far more danger in deferring the shift of precedence than there is in making it; for success in increasing and in sustaining production are not, and cannot give, success in war itself. Clemenceau's quip that "wars are too important to be trusted to generals" applies with still fuller force to producers.

In the combat food supply service there are signs that the change may occur soon. Responsible men who see events coming are aware that their authority and means do not extend to taking prompt and adequate action. For example, a program for greatly increased conversion of vegetable and milk canneries into dehydrators was devised before the Foods Requirements Committee was created. The actual conversions have hardly begun. Loss of a crop year for a necessary food product by such a delay is not an attribute of good warfare.

The coming phase in the timing of food deliveries overseas affords another symptom of early change. All concerned know that a new great increase in warfare on our part and Britain's is coming. As yet there is no inter-Allied organization with responsibility and authority to make this knowledge "official" in the sense of governing the actual conduct of those possessing the personal knowledge.

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The Lend-Lease Operation

By CHARLES BURTON MARSHALL

THE lend-lease program extends to every aspect of the material preparations of warfare, including foodstuffs, industrial materials, and military items. Two years of experience with it have brought out the importance of the food factor, which was all but ignored when the policy was a legislative issue. The reports which President Roosevelt, as directed by the Lend-Lease Act, forwards to Congress every ninety days, lay increasing stress on the role of food in this new method of international economic dealing. In the sixth report (September 11, 1942) we learn that for August the total lend-lease aid was at the rate of approximately eight billion dollars a year. For the whole period of lend-lease, agricultural products (of which about 98 per cent are foodstuffs) have averaged about 25 per cent of the total.[1]

Bearing out the implication of a food program of nearly two billions a year, a bulletin issued in July 1942 by the Agricultural Marketing Administration, which makes the food purchases for lend-lease, reports procurement of three hundred farm products for shipment to the United Nations at a rate of "5 or 6 million dollars a day."

SIGNIFICANCE OF LEND-LEASE

The volume is great. The strategic significance is incalculably great. The sources from which and the channels by which Britain imported 63 per cent of her foodstuffs before September 1939 have been overrun by the enemy and reduced by undersea warfare. The threat to the health and efficiency of her populace has been alleviated by lend-lease. Russia, deprived of her most productive expanses, has likewise been sustained in part by lend-lease. Transfer of farm machinery and seed as well as direct export of food has been useful to this end.

The perils and adventures encompassed in this food program include all the fortunes of war. Food going to Russia must travel so far that the ship which bears it may head east, west, north, or south, leaving the American shore. Along all routes lie four weeks of danger from Axis raiders and heavy weather. After reaching Russia such food must be transported for perhaps thousands of miles over mountain and wasteland on single roads or tracks much of which is under direct threat from the enemy. Food going to the other United Nations follows similarly adventurous paths.

The food program includes innovation as well as adventure. Concentrated vitamins, small in bulk, have been transported to Britain by bomber, there to become the basis of a project of free vitamin distribution to 1,300,000 children under two years of age. Production of vitamin C in the United States has been expanded because of lend-lease demands.

Packaging difficulties and shipping shortage have been limiting factors. The quest for maximum nutritive value for volume shipped has induced experimentation. As the sixth report on lend-lease observes, "war places a high premium on ingenuity. Within the Lend-Lease Act and with the use of lend-lease funds there is ample scope and opportunity for the testing and development of new ideas that may help to win the war."

Part of the answer has been found

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[1] Private communication from the Office of Lend-Lease Administration.

in dehydration, which saves in the case of beef about 90 per cent of cargo space; eggs and milk, about 85 per cent; vegetables, about 70 per cent. The general result of dehydration, the Office of Lend-Lease Administration reports, is "that, on an average, a thousand tons of food exported today are the equivalent of two thousand tons of food exported in the early days of the lend-lease program." It is noteworthy that, while tanks, planes, and industrial machinery require considerable time for production, food supplies frequently can be made available for shipment at short notice. This was and still is extremely important in utilizing advantageously the limited shipping space at our disposal. New packaging for evaporated milk, cheese, and other products to meet the rigors of wartime transport, shipping of frozen meat in unrefrigerated ships by surrounding it with cans of chilled lard, and the development of egg-drying techniques increasing egg-drying capacity tenfold, are among the innovations recounted in lend-lease reports.

ORGANIZATIONAL STRUCTURE

The final authority in administering lend-lease is, of course, the President. With the recently established exception of appropriations for ordnance and munitions and ships, now made by Congress directly to the War and Navy Departments and to the Maritime Commission, lend-lease appropriations are made to the President. He retains power to determine what nations shall receive lend-lease aid, and to define the major considerations of policy. Under the Lend-Lease Act he promulgates the rules, chooses and sets up agencies to execute the program, and allocates functions. Representing him, the State Department is in charge of making agreements stipulating the terms and conditions of aid, with the recipient countries. In this it is advised by the Board of Economic Warfare, which deals with the broad outlines of our world economic policy, and by the Office of Lend-Lease Administration.

This latter office, created by Executive order on October 28, 1941, is the key agency in lend-lease routines. This office co-operates with lend-lease nations and with other governmental agencies in making broad plans for aid. It allocates to various procurement agencies the funds appropriated to the President by Congress. It passes upon requisitions by lend-lease nations for particular defense articles and services, and forwards such requisitions to the appropriate procurement agencies. It assists in obtaining priorities to fulfill such requisitions. It expedites storage and transportation of lend-lease articles. It sees to the proper use of lend-lease articles abroad. It records all lend-lease transactions, and it prepares the reports to Congress.

Lend-lease is an integral part, but only a part, of the entire war production plan. In its functions the Lend-Lease Administration necessarily maintains rapport with an array of other Federal agencies and with the appropriate offices of the various lend-lease nations.

In passing upon requisitions, as in laying broad plans, the Office of Lend-Lease Administration subjects them to tests in conformity with the standards laid down by Congress and the President. Aid contemplated must be for a use specifically essential to the total war or defense effort of a country whose defense the President has found vital to the defense of the United States. The aid sought must be deemed more important to the total war effort of the United Nations than any competing demands for available goods. The aid must be scheduled for use where it will count most. It must be obtainable at a low figure in terms of lend-lease funds and of component critical materials, so far as consistent with the need in view. It must also be practically unobtainable by other means—that is, by payment in dollars or other currency available to the requisitioning nation.

In testing for utility the essential question is: Will the war effort be helped? The answer is sought in a practical way that takes into account human as well as mechanical factors. For instance, tobacco is included in the lend-lease program. Now warfare without tobacco is conceivable and feasible. Yet tobacco involves morale. If the United Nations' fighters have it and their adversaries lack it, something is added to the war effort.

In foods as in other facets of the program, lend-lease involves the exercise of judgment and economic planning. Lend-lease requirements must be weighed along with others in the plans and allocations made by the Food Requirements Committee headed by the Secretary of Agriculture.* Here the Office of Lend-Lease Administration is represented, as are also other governmental agencies whose functions converge in the food problem. The War and Navy Departments have needs that must be filled. The War Production Board, concerned with civilian supply and with the food bank, and the State Department and the Board of Economic Warfare, concerned with a world picture that includes the needs of nations both within and without the lend-lease program, are also represented. Since allocation merges into rationing, the Office of Price Administration may also be concerned.

Just as in the matter of food lend-lease touches upon a variety of interests and agencies, so does it also with respect to munitions and ordnance, shipping, petroleum, and so on through the list of things with which lend-lease deals.

INTERNATIONAL COLLABORATION

The whole matter of procurement and allocation in which lend-lease plays a part must also be worked out internationally among the United Nations. This is done principally through a set of combined boards on which representatives of the United States and of Britain sit. The members of these combined boards are charged to "confer with representatives of the Union of Soviet Socialist Republics, China, and such other of the United Nations as are necessary to attain common purposes and provide for the most effective utilization of the joint resources of the United Nations."

Thus a Combined Shipping Adjustment Board co-ordinates the efforts of the British War Transport Ministry and the American War Shipping Administration in allocating available shipping. Ships which carry lend-lease are assigned to do so after appraisal of competing needs by this Board. To prevent the blocking of vital transportation by dollar exchange problems, lend-lease funds finance the operations of American-controlled shipping assigned to carry lend-lease cargoes. A Combined Production and Resources Board, consisting of the American and British production chiefs, integrates the production programs out of which the United Nations' vast and various needs, including all those within lend-lease, are met. A Combined Food Board, sitting at Washington and composed of the Secretary of Agriculture and the head of the British Food Mission, has as its purpose "a planned and expeditious utilization of the food resources of the United Nations." Common problems of supply, production, transport, and allocation of food and food equipment throughout the world come within its scope.

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* The Food Requirements Committee was abolished in the Executive order of December 6. Its place is taken in part by an Advisory Committee made up of representatives of about the same agencies.

An imaginary example may clarify the lend-lease process. The British Food Mission may introduce a request for the budgeting of lend-lease funds to meet a program of, say, 50,000 tons of pork from the United States in 1944. Theoretically, the Office of Lend-Lease Administration will then clear the request through the Food Requirements Committee. This Committee will weigh it against competing needs and in the light of the plans of the Combined Food Board, the Secretary of Agriculture being at once a member of both.[2] The Office of Lend-Lease Administration will also consult with its London office, which has a staff able to render advice drawn from familiarity with the needs and plans of the British Food Ministry. Also, the Department of Agriculture will be consulted upon specific procurement prospects. If the answers along the line are affirmative, the pork program is scheduled and the British so informed.

PROCUREMENT OPERATIONS

In carrying out this agreed program the Lend-Lease Administration acts as a co-ordinator. Specific procurement operations are carried out by the same agencies as procure for the Government, thus avoiding wasteful duplication and harmful rivalry in the market. Military devices and munitions are procured by the War Department; petroleum products and naval ordnance by the Navy Department; ships by the Maritime Commission; agricultural machinery, chemicals, and miscellaneous articles by the Treasury; and food and other agricultural commodities by the Agricultural Marketing Administration of the Department of Agriculture.

The Agricultural Marketing Administration procures foodstuffs both for lend-lease and for such purely national undertakings as Red Cross distribution, direct relief, the food stamp plan, the domestic school-lunch and penny-milk programs, territorial emergency food programs in Hawaii, Alaska, Puerto Rico and other Caribbean islands, and for the Army and the Navy, including the building up of stockpiles. The volume of purchases for all these purposes combined is tremendous. In order to obtain these quantities the purchase programs are planned months in advance. In the final arrangements for execution worked out through the Food Requirements Committee, other governmental agencies are called upon to expand processing facilities in order to meet demands and obtain reservation orders whenever necessary to insure supply.

Buying is done in such a way as to maintain the widest competitive market consistent with the task. The purchases for lend-lease are made as a rule from co-operatives and commercial processors and distributors directly. The procurement program is activated by announcement of purchase intentions, specifying the period for offers, minimum quantities, quality specifications, and so on. In procuring manufactured dairy products and fresh and prepared meats for lend-lease, the Agricultural Marketing Administration usually asks the trade to submit offers. Those accepted become contracts on the basis of their terms and those of the announcement. This method and one wherein the announcement lists the maximum prices that will be paid for specified grades are used in procuring eggs and poultry and fruits and vegetables; in the latter method, offers at or under the posted price become contracts if otherwise acceptable. In some cases the Marketing Administration has issued reservation requests in advance to ensure supply, and also, as in the case of the 1942 canned fish pack, the War Production Board may set aside a whole year's production of an article for Government needs fulfilled through the Agricultural Marketing Administration.

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[2] Actually, this has not been done except in cases in which the supplies are very short. Instead, the requests are cleared first through the Agricultural Marketing Administration from the standpoint of supply, and then through the Office of Lend-Lease Administration from the budgetary and policy standpoints.

The Agricultural Marketing Administration and the other procurement agencies are responsible for the steps from the time they receive requisitions until the articles have passed through the domestic transportation and warehouse stages and have reached shipside. The Office of Lend-Lease Administration finances the procurement, acts as coordinator, and gives other necessary assistance.

LOOKING FORWARD

Lend-lease is a procurement program of consequence to millions of American producers. It is a huge system of international economic strategy. Nations comprising two-thirds of the earth's land surface and of its population participate in it. Also, lend-lease has emerged, to quote the fifth quarterly report, "as a factor in the combined effort of the United Nations to weave a pattern of peace . . . , the first of our concrete steps in the direction of affirmative postwar reconstruction." Of strategic importance are food reserves of the right kind for feeding in occupied territory and for postwar reconstruction. Food may turn out to be one of the major weapons in the hands of the United Nations.

Under the statute the President has authority to determine as he "deems satisfactory" the "terms and conditions" for extending aid. "The benefit to the United States may be payment in kind or property, or any other direct or indirect benefit which the President deems satisfactory," the act says. Looking forward to eventual adjustment of obligations created under the program, this Government has signed with Great Britain, the Soviet Union, China, Poland, Belgium, the Netherlands, Greece, Czechoslovakia, Norway, and Yugoslavia a statement of broad postwar policy. Australia and New Zealand have declared adherence to its principles also.

These Master Agreements declare that the terms and conditions of the eventual benefits to be provided in return for lend-lease aid "shall be such as not to burden commerce . . . , but to promote mutually advantageous economic relations . . . and the betterment of worldwide economic relations." Mutual action is envisaged,

> directed to the expansion, by appropriate international and domestic measures, of production, employment, the exchange and consumption of goods, which are the material foundation of the liberty and welfare of all peoples; to the elimination of all forms of discriminatory treatment in international commerce, and to the reduction of tariffs and other trade barriers.

Finally, the Master Agreements embrace the economic purposes set forth in the Atlantic Charter: equal access to trade and raw materials for all nations and "fullest collaboration between all nations in the economic field with the object of securing, for all, improved labor standards, economic advancement, and social security."

Commenting upon these purposes, the fifth quarterly lend-lease report states, "By this provision we have affirmatively declared our intention to avoid the political and economic mistakes of international debt experience during the twenties." It adds, "A lend-lease settlement which fulfills this principle will be sound from an economic point of view" and "will represent the only fair way to distribute the financial costs of the war." All the United Nations, it is emphasized,

> are seeking maximum conversion to war production, in the light of their special resources If each country devotes roughly the same fraction of its national production to the war, then the financial burden of war is distributed equally among the United Nations in accordance with their ability to pay. . . . The money costs of the war will fall according to the rule of equality of sacrifice, as in effort.

Lend-lease proved its utility before December 7, 1941, serving as a means whereby the United States sustained its eventual allies against its eventual enemies. Since war came, lend-lease has continued to prove itself, being a means not only of provisioning our allies but also of provisioning this nation; for, as the fourth quarterly report phrases it, "lend-lease is not a one-way street. . . . The development of reciprocal aid among the United Nations . . . has been one of the most important recent developments in the administration of the act." The reciprocal aspect of lend-lease has been formalized in agreements with Great Britain, Australia, New Zealand, and the Fighting French.

PEACETIME SURVIVAL

Whether lend-lease will achieve its purposes in the peace as it has done in the war depends on things which cannot be foreseen. Its high purposes represent in a sense a collaboration of the two political departments of this Government. It is administered under the President in a field where his authority is plenary. In detail, however, it stems from Congress' power to spend for the common defense and "to dispose of and make all needful rules and regulations respecting . . . property belonging to the United States." Congress keeps a check through the requirement of reporting, through its power to appropriate, and through its power to cancel the policy by concurrent resolution. So long as the President informs Congress, as he must, and so long as Congress continues, as it has done, to implement the policy by appropriations, and fails, as it has done, to exercise its power to repeal it by concurrent resolution, lend-lease is in essence a joint work. Whether that junction in purpose will survive in the period of reconstruction, one can only guess.

Lend-lease is a form of international planning. That kind of planning is not separable from planning within nations. War produces the necessities and the agreements on purpose which permit integration and planning within the nation. If those conditions survive into the peace, it will at least not be by unanimous consent.

For example, a recent editorial in *Southern California Business*, organ of the Los Angeles Chamber of Commerce, warns that "the lend-lease agreements with 44 nations of the world are planned to continue along substantially the same lines after the war." This organ assails "a Lady Bountiful type of international philanthropy." Of the "economic planners so-called" it says that "according to these people they haven't merely the job of managing the American economy on their hands. They are going to manage the whole world!" In contrast, the editorial predicts that when this war is over "we will be an impoverished nation," and asks, "Isn't it reasonable to expect that we may be short of the ingenuity needed to look after ourselves, let alone the rest of mankind? What have we done in the recent past to suggest we are so good and so all-wise that we can assume the role of an international Solomon?"

In the premises of lend-lease one finds these answers: Lend-lease is not "a Lady Bountiful" undertaking, but a project of mutual assistance and reciprocal benefit. Whether we are to be an impoverished nation after the war depends upon the prudence with which we plan to meet our problems. And as for the lessons of our recent past, they show that worldwide problems had best be met on a worldwide basis.

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Food for the Armed Forces*

IT IS neither possible nor desirable to state with any definiteness the quantities of food that will be required by our military establishment next year and in succeeding years. But a few general considerations can be presented that help to a better understanding of the problem.

If one could conceive of the problem in terms of an army of five million men, let us say, created all at one act, the analysis would be relatively simple. One could begin with the quantity of food which an army of this size actually eats day by day, allowing properly for different types and degrees of military activity. This amount could be conceived in terms of how much more the five million consume in the army than they would have consumed as civilians. To this would need to be added a margin for losses and wastes due to the difficulties of feeding men more or less on the move, losses in transport, losses by bombings, fire, and other destruction; perhaps, let us say, 10 per cent, or 20 per cent. This would be the amount that would need to be provided currently for that army day after day as long as the army was needed.

But when an army gets ready for active duty, especially in distant lands, an advance supply sufficient for several months must be accumulated near the country being invaded, or actually in the country being occupied. Then the supply pipe lines have to be filled; the longer the pipe lines, the larger the amounts initially needed to fill them. Once the pipe lines are filled, the flow continues normally except for shipping losses, and other factors. Safety also requires that additional supplies be accumulated not far from ports where they can be loaded for overseas transport to keep the reserves of the army of invasion at a near-constant level.

Thus while the army is being prepared for actual duty, food "equipment" needs to be assembled for it that represents a considerable addition to current day-to-day consumption—perhaps enough to double it if the army is being developed rapidly. Once these reserves are established at the required level, however, the current demands are equal only to day-to-day consumption. It is the stocking-up period that makes the heaviest drain on food output.

To bring the foregoing statement down to terms of realities, one must allow for the rapidity with which the armed forces of the United States are growing. This of necessity requires unusually heavy food supplies in order to build adequate reserves in addition to meeting heavy current consumption needs. Also, as food shortages develop in the United States, reserves at training camps must be increased in order to be absolutely certain of a continuous supply of food.

Thus there is a steeply ascending demand for food for our armed forces until they reach their maximum size. After that, the demand will fall off to current consumption only. At some point in the war, it may be safe even to reduce the reserves.

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* Prepared from information supplied by the staff of the Food Requirements Committee—J. D. BLACK.

The Food Production Programs of the United States Department of Agriculture

By Charles M. Hardin

IN SEPTEMBER 1941 the Department of Agriculture issued a statement that was at once a program and a challenge to the agricultural front—the famous "production goals." Increases were called for all across the board. These goals could have been staggering. Instead they were exhilarating. Secretary Wickard and an extremely able staff took the goals to the people in a series of whirlwind conferences in Memphis, Salt Lake City, Chicago, and New York. There was drive in this program, and the farmers cheered.

War came, and the way of its coming cut off Manila hemp, imperiled the jute supply, and ended most of our vegetable oil imports. The shadow of this war began to stretch into the years ahead. Our needs for food and fiber swelled proportionately. Hardly had the first goals program got under way, hardly had the intention-to-plant survey been made, when the goals were revised upward.

Production for 1942

Columns B and C of Table 1 tell the story. Note the increases in soybeans and peanuts for oil, in flaxseed, beans, peas, and tomatoes, and in hogs. The farmers won the rural battle of 1942. To be sure, they did not break the goals in every item, but on some they did—see the soybean total in column C. The hog goals of January 1942 called for 114 per cent of 1941 production; farmers produced 124 per cent. Milk fell short of the 107 per cent of 1941 production—yet the dairymen rung up a striking gain.

But what of the needs for 1943? No over-all goals have been announced at this writing (November 8, 1942). They will come in December. Goals for a few specific items have been issued—wheat, hogs, and winter vegetables. Be assured that other increases will be requested. Can they be attained?

Favorable weather, improved varieties, and progressive mechanization, plus longer working hours for the whole family—these things called forth the great production of 1942. But the limit of *total* production has about been reached. A capacity study of agricultural production in the United States was completed in August.[1] For our selected commodities in Table 1, column E gives the "feasible" production in 1943, as presented in the report of the study. The complete picture suggests a *total* gain of no more than 1 or 2 per cent over 1942.[2] And some people shake their heads at these maximums: short labor, short fertilizer, short machinery—these are the doubts that obscure the planner's future.

And yet, column F in Table 1 gives "potential" increases that are much higher than the "feasible" ones! The explanation of this apparent contradiction is that the items in column F are mutually exclusive. If peanuts are doubled, cotton will have to be decreased; if soybeans for oil are stepped up 35 per cent, oats and corn must suffer. More dairy products, fewer hogs; and vice

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[1] In a letter of submittal to Secretary Wickard, H. R. Tolley, chief of the Bureau of Agricultural Economics, said: "This report, built literally from the ground up, is perhaps the most complete capacity estimate ever made of agriculture" (p. 2) It was a co-operative job: U. S. Department of Agriculture bureaus, state colleges, and others.

[2] See discussion under subhead—Two Programs in Conflict.

TABLE 1—PRODUCTION GOALS AND PRODUCTION CAPACITY

Commodity	Unit	Number of Units					
		A	B	C	D	E	F
		1941 Production	1941 September Goals	1942 January Goals	1942 Production	1943 Feasible Production (Per cent of 1942)	1943 Potential Production (Per cent of 1942)
Hogs	Million lbs.	17,754			21,737	112	130
Cattle and calves	" "	16,667			17,604	100	
Sheep and lambs	" "	2,264			2,292	102	
Milk	" "	115,498	125,000	125,000	119,739	103	108
Eggs	Million dozen	3,480	4,000	4,200	4,012	106	115
Corn	Thousand acres	87,164	87,500 to 90,000	92,500 to 95,000	91,098	101	110[a]
Wheat	" "	62,404	50,000 to 55,000	55,000	53,427	102	
Flaxseed	" "	3,367	3,367	4,500	4,675	103	152[a]
Peanuts (nuts and oil)	" "	1,969	3,500	5,000	4,187	120	240[a]
Soybeans for beans	" "	5,855	7,000	9,000	10,394	110	135[a]
Sugar beets	" "	794			1,061	102	
Dry edible beans	" "	2,304	2,304	2,600	2,376	103	137[a]
Dry field peas	" "	343		665	509	128	200[a]
Potatoes	" "	2,793			2,845	102	
Tomatoes for processing	" "	472		580[a]	614	105	
Cotton	" "	23,132	22,000 to 24,000	25,000	24,005	101	
Tobacco, flue-cured	" "	718	762	843	796	104	
Tobacco, burley	" "	343	358	383	356	103	

Sources: For columns A, D, E, F: *Wartime Agricultural Capacity*, Aug. 1942. For columns B, C: Press release, Secretary Wickard, Jan. 16, 1942.

[a] Highly approximate.

versa. This column sharpens our perception of the three economic facts concerning food and this war:

1. We have a short agricultural plant. Considering the Nation as one big farm, we have not the land, labor, nitrates, and machinery necessary to grow all we can use of all crops.

2. We have to consider relativity of needs. It is true that we need all of everything that we can produce, but we need some items more than others. Competing needs have to be weighed against each other.

3. Our plans have to be made in a highly dynamic world. The changing fortunes of war may require a rapid revaluation of competing needs. Clearly, we have to be able to make such revaluations with as great flexibility as conditions of agricultural production will allow.

Now we see the wisdom of making the "potential" predictions. They may be wrong, but they are the closest that informed men can come to the absolute upper limit, commodity by commodity. Moreover, the national capacity study is built upon similar reports for the forty-eight states. In the latter, "potential" increases are shown along with the decreases that would perforce be concomitant in other crops. Thus, Minnesota indicated a potential increase in hog production of 41 per cent, requiring 23 per cent more corn to be grown in 1943 than in 1942. This would necessitate the following decreases: 45 per cent in soybean acreage, 35 per cent in flaxseed, 2 per cent in oats, 3 per cent in barley, 4 per cent in wheat, and so forth. The capacity studies also indicate the obstacles to production, breaking them down, quantitatively, at least, state by state. Here, then, are the capabilities and the problems. With this information, the reader will say, we can plan the production of food and fiber for war.

THE AAA PROGRAM

But there is another planned production program in this country. Coexistent with the war foods drive (the goals program), there is the Agricultural Adjustment legislation. The two programs, moreover, are administered (operationally, at least) by what is in effect the same organization—the war boards.[3] How do these two programs fit together? To understand, we must see what the Agricultural Adjustment Administration is and does.

The AAA is a powerful agency, well staffed on national and state levels, and with some ninety thousand county and community committeemen who (and this phrase is studied) cover the rural United States. The AAA is the chief channel through which Federal funds have gone to agriculture. For example, in fiscal 1942, the Department of Agriculture spent $1,288,900,000, of which 55 per cent went out through AAA channels.[4] In addition, the AAA and the Commodity Credit Corporation are combined in field administration, although they are separate at Washington; thus the prestige of the AAA is enhanced by administering a loan program with (at the close of 1941) resources of two and three-quarter billion dollars.[5] Such an organization, continuous and well financed, inevitably acquires characteristics of importance to us in this paper: first, power, authority, importance in the current political configuration; and second, an "administrative personality"—a group of attitudes, a reputation, and an *esprit de corps.*

Regarding power, consider that when Mr. Wallace stepped out of the Secretaryship of Agriculture in 1940, his place was filled by Mr. Wickard of the AAA. And the attacks upon the functions of the Department of Agriculture by the economy-minded (such as Harry Flood Byrd) and by the bureaucracy-minded (such as the Farm Bureau Federation) have dealt very gently indeed with the Agricultural Adjustment Administration. The features of the administrative personality of the AAA are many. For us, the important ones are the administrative attitudes which derive from operating over a period of years a vigorous—but also essentially a rigid—program.

The annual plans of the AAA, drawn up partly by the Secretary and partly by the AAA itself, are made within narrow statutory limitations.[6] Parity for farmers is the central theme, to be approached by price increases for the basic commodities—wheat, corn, cotton, rice, tobacco, and peanuts. To this end, production of basic commodities is controlled, and the movement of such commodities to market is leveled out through Commodity Credit Corporation loans; finally, the Agricultural Conservation Program and parity payments are supposed to make up the difference so that co-operating farmers enjoy "parity prices." This means now, and has meant since 1933, planning broad sectors of the agriculture of the United States.

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[3] See article by Clayton and Black.

[4] These are estimates, drawn from Hearings, Agricultural Subcommittee of House Committee on Appropriations, 77th Cong., 2d sess., I, pp. 94–96 (Table 7).

[5] Report of the Secretary of Agriculture, 1941, p. 84.

[6] One should not be misled by the breadth of the congressional declaration of purposes in the AAA of 1938.

Such plans are made annually. Congressional appropriations are renewed each year; moreover, the statutes contain formulas for the annual determination of acreage allotments and marketing quotas. The result is that the determinations of the Secretary and the annual program bulletin are practically cut and dried affairs.

Consider acreage allotments. These are made for basic crops in amounts which, added to the carry-over of these crops, will not exceed domestic and export needs plus a margin for safety. Allotments are broken down by states, counties, and farms; agreement to stay within his allotted acreage makes the farmer a co-operator in the Agricultural Conservation Program of the AAA. The farmer's immediate inducements are ACP payments of two kinds: (1) payments for staying within his allotments, and (2) soil-building payments, earned by acceptably performing certain practices—terracing, strip-cropping, and so forth.[7]

From co-operation in the Agricultural Conservation Program, other things spring. The co-operating farmer is eligible for parity payments.[8] These payments are designed to give the farmer parity prices (or income) when added to either his market price or his Commodity Credit Corporation loan and also to his ACP payments.[9]

These Commodity Credit Corporation loans are also conditioned upon co-operation in the Agricultural Conservation Program. This is the basis of the Ever-Normal Granary. How important the Commodity Credit Corporation is in the commodity market may be illustrated by noting that of the 1942 near-record wheat crop (approximately 1,000,000,000 bushels), some 400,000,000 bushels were expected to go under loan.[10] What are the sizes of these loans? They began at 75 per cent of parity in the AAA of 1938. In 1941 the Farm Bureau Federation and the farm bloc raised them to 85 per cent of parity. In October 1942 they were raised to 90 per cent, except that the rate on corn and wheat for feed may be as low as 85 per cent.

HISTORICAL BASE RIGIDITIES

What is parity? Merely a ratio between prices for things farmers sell and for things they buy—that reflects the ratio between the things sold and bought in the period 1909–14. The effect is that the entire AAA program is an effort to project the agricultural production pattern of the past into the future. There have been acreage reductions under the AAA, but roughly, the same historical production is the goal.[11] That is, there is a curtailment of supply towards a certain level of demand. Hence an enhancement occurs in the value of the supply; and this in turn means that it becomes more attractive financially to furnish or produce part of that supply. Thus arises the all-important question, Who is going to be permitted, or have the right, to produce that supply? Reader, how would you answer this query?

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[7] The statutory limitation for ACP funds is $500,000,000. This level has been approximated recently, but for fiscal 1943 the appropriation is $450,000,000. No farmer may earn more than $10,000 here in any one state.

[8] In recent years the Senate has allowed $212,000,000 for this item, and the House of Representatives has concurred. There is no limitation here; many payments far in excess of $10,000 have been made.

[9] There has been controversy on this point. The most authoritative statement upon it, however, that of Senator Russell (Georgia), may be found in the Hearings, Agricultural Subcommittee, Senate Committee on Appropriations, 77th Cong, 2d sess., p. 73.

[10] H. R. Tolley, "Commodity Reviews," *The Agricultural Situation,* Oct. 1942, p 7. Operations of the Commodity Credit Corporation in 1942 have been extremely controversial See note 24, below.

The answer of Congress is that history is to decide. The same area that produced the supply in the past has the first call. More than that, within this area, the same farms that produced in the past have the first call. This is the principle of the historical base.[12]

The results are as follows: First, American agricultural production under the AAA tends to be frozen in terms of the commodities heretofore produced. Second, the production of these commodities tends to be frozen in the areas in which they have historically been produced. Third, within these areas production of different crops tends to be frozen on the farms on which they have historically been produced.

How is this plan enforced? First, by a system of financial incentives—ACP payments, parity payments, and loans. Second, for those crops in which referenda of the growers have been favorable, by drastic penalties upon producers who exceed their marketing quotas—which again are determined by historical bases.

This, then, is the AAA in planning and in action. There are annual determinations by the Secretary of Agriculture regarding acreage allotments and marketing quotas: Each year there is an Agricultural Conservation Program Bulletin, the fruit of an annual conference meeting at Washington, normally in July. Attending are four or five representatives from each state, including extension directors, AAA administrative officials, and members of AAA state and—occasionally—county committees. Similar preparatory conferences have been held on district, state, and regional levels. Thus the national meeting is supposed to be cumulative and culminatory of agreements already reached at other levels. In Washington, committees are chosen.[13] Recommendations are brought before the AAA conference, discussed, changed perhaps, and approved or rejected. After which:

> *Insofar as possible*, these recommendations adopted by the Conference will be included as provisions of the [1942] program, *with only such modifications as may be necessary after taking into consideration the applicable legislation and over-all administrative policy.*[14]

The narrow limits within which recommendations can be immediately effective have already been indicated: [15]

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[11] With adjustment for changes in requirements, both domestic and foreign, including allowances for changes in consumption.

[12] True, the legislation specifies other considerations, but the historical base is the determining one for administrative purposes.

[13] In 1941 these were as follows: (1) Defense Program and the AAA, (2) Soil Building Practices, (3) Conservation Materials, (4) Allotments, Allowances, Yields, (5) Educational Activities, (6) Marketing Quotas, (7) General Program Provisions, (8) Great Plains, (9) County Administration, and (10) Commodity Loans. Committees have about thirty members with representatives of the regional or divisional offices in Washington.

[14] Italics supplied.

[15] Statutory restrictions, however, do not apply to the *thinking* of the delegates! In the AAA we have, of course, a powerful political group; i.e., an administrative organization "doubles in brass" as a political pressure group upon legislatures. There is nothing novel in this, nor reprehensible. In a democracy nearly all administrative agencies bring political pres-

administrative changes are possible in soil-building practices, and in the stringency of requirements upon co-operating farmers regarding ACP payments (but not regarding parity payments or the eligibility for Commodity Credit Corporation loans), and in administration. What kind of changes were written into the 1942 Bulletin? The "total soil-depleting crop allotment" was eliminated, as were "commercial vegetable allotments." Farmers were required to perform certain soil-building activities to earn the allotment part of the ACP payments. Further development of soil-building practices occurred. The "restoration land" provision was removed for the northern Great Plains. In addition, special recommendations were made for the continuance and expansion of the "special program" in the southern Great Plains.[16]

Such detail about the annual bulletin writing is suggestive, not only because it shows the stringency of limits upon the AAA, but also because it indicates the vigorous way in which some of the AAA personnel and the Extension Service are beginning to think about agricultural production. We will return to this point.

TWO PROGRAMS IN CONFLICT

How does the AAA actually conflict with the war production program? Here are some examples.

First, the minimum national acreage allotment for wheat is set by the AAA at 55,000,000 acres. Wheat acreage for 1942 was slightly under this figure because attractive alternatives were offered, particularly in the Soft Red Winter wheat belt (running from Maryland to Kansas). In June 1942, with the creation of the Food Requirements Committee, its Chairman (Mr. Wickard, Secretary of Agriculture) made a few remarks about a reduction of wheat acreage to 21,000,000 acres. As Chairman of the Food Requirements Committee, Mr. Wickard has authority to order himself as Secretary of Agriculture to make the reduction![17] Such an order would run headlong into the congressional

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sure upon legislatures. However, the size, strength, and economic power of the AAA swell to gigantic proportions the implications of its political activities. Nor need these activities remain confined to agriculture; e.g., the Committee on the Defense Program and the AAA in 1941, among other things, endorsed the Office of Price Administration, and recommended higher taxes "particularly upon excess profits, incomes, and luxury items. . . ." There is no space for developing this line further, of course.

[16] Regarding the special program that had spread to 41 Dust Bowl counties by 1941, some interesting developments occurred. The national conference voted to continue ACP payments to wheat farmers in this area *regardless of whether they continue to plant wheat.* The Nation has heard much from the Dust Bowl. It is a marginal area for wheat production—most of the area has an average April to September rainfall of 15 inches (see "Climate and Man," *Yearbook of Agriculture,* 1941, p. 712). This figure of 15 inches is a critical one; given that amount or a little more, and wheat can be grown satisfactorily. A very little fall below 15 inches, however, means a crop-killing drought. The important thing is that for a number of years the rainfall appears to hold up rather continuously above 15 inches; then comes a period of dry years. Even in the dry years, however, farmers have to plow up their land and seed to wheat or else lose their historical bases. The confining legislation here is in subsection c of Sec. 101, AAA of 1938. Whether continuation of the same ACP funds into these areas regardless of seeding can be achieved without amending the act is doubtful Even if this can be done, however, farmers would probably be loath to shift out of wheat if parity payments were still subject to present qualifications. Hence the act would have further to be amended to condition parity payments upon the carrying out of soil-building practices. Thus this detailed consideration of what is necessary to modify the AAA program according to needs of the Dust Bowl shows what an obstacle race to reform the present legislation presents.

[17] The order would have to be countersigned by Donald M. Nelson of the War Production Board.

mandate, of course;[18] and a little later Secretary Wickard announced the 1943 program for wheat. Regretfully he set the limit at 55,000,000 acres, but announced that wheat farmers would get special payments for shifting part of their wheat acreage to special war crops.

Second, note that the feasible production for 1943 in the August capacity study purports to realize its gains at the expense of rotation pasture, commercial truck crops for market, rye, grain sorghums for forage, and barley—none of which are basic crops in the AAA legislation. Reading between the lines, cannot one infer that the administrators who drew up the study felt themselves bound not to touch the untouchable?

Third, as we have seen, the configuration of American agricultural production represented by the AAA is protected by a floor, namely, the Commodity Credit Corporation loans, now at 90 per cent of parity (except for corn and feed-wheat). The "necessary price" to draw forth crops which compete with the basic crops has to be high indeed! The natural reaction to this is the sort of subsidization operations that the Office of Economic Stabilization recently authorized in connection with feed-wheat. Now subsidies may have an important part to play in the war effort, but they should not be perverted into mere guarantors of the status quo.[19] Thus the high Commodity Credit Corporation loans aggravate an already difficult problem, i.e., the bringing about of shifts in agricultural production.

Fourth, there is interregional discrimination. The most glaring example of this is in the AAA restrictions which penalize cotton production in the so-called "new lands" of the Mississippi Delta.[20] Yet the Delta is better suited for long-staple cotton, for which present needs are dire, than are other and older cotton regions. Moreover, cotton production requires much less fertilization in the Delta than in most other cotton regions.

Fifth, there are administrative difficulties. Traditional thinking has to be overcome. The writer's opinion is that it is being overcome: witness the bold innovations proposed in 1942 for the Agricultural Conservation Program.[21] Here, however, there is administrative leeway. But AAA is also hampered, paradoxically, by lack of administrative funds! Indeed, the money spent for administration has been the chief target of the economy bloc.[22] The result is that if the AAA has to bring about a 10 per cent increase in soybeans in a certain county, it is prone merely to go down the road and ask for such an increase from each farmer; this is the easiest and least efficient way. Assistance from agricultural specialists in economics, agronomy, and conservation obviously could cut the pattern of the increase according to farm-to-farm variations within the county.

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[18] However, a good argument can be made that the order of the Food Requirements Committee Chairman should prevail: he is really wielding the full war powers of the President (both prerogative and those granted by Congress). One can argue that the 55,000,000-acre limitation is itself limited in application to the AAA—a peacetime plan for agriculture, conceived and carried out before the war, and toward different purposes from those which now obtain. The two authorities are even differently based constitutionally. The AAA of 1938 rests on the commerce power. The basis for Wickard's authority as Chairman of the Food Requirements Committee rests upon the war powers—of Congress as well as of the President. This argument is in no way specious.

[19] Compare the subsidies announced for the New York milk market.

[20] New growers in the Delta are permitted only one-half as much cotton allotment on the basis of tilled acreage as they are elsewhere during the first year; this limitation then decreases their historical base!

[21] See note 16, above.

[22] See Hearings, Agricultural Subcommittee, Senate Committee on Appropriations, 77th Cong., 2d sess, pp 712–15, for testimony of Hon. Harry Flood Byrd.

THE PART OF CONGRESS

Clearly, some necessary changes are possible administratively. But the onus really is on Congress. That body can substitute parity *income* entirely for parity *prices*, thus freeing the AAA from an outmoded pattern of commodity production. Two supremely beneficial results would follow. Total agricultural production could again be adjusted according to the need for agricultural produce. At the same time, efficient farming could be appropriately rewarded. A larger fraction of AAA appropriations could be made available for the task of getting out war-needed types of production. The minimum national wheat acreage could be stricken out. And subsidies to call forth agricultural production not otherwise attainable could be voted—openly and fearlessly. Why should Americans cringe at this word? What else is the protective tariff?

All this Congress can do; much of it can be done only by Congress. Here is a challenging opportunity for those of the Seventy-eighth Congress who interpret the recent elections as a mandate for action from a public fed up with "muddling Washington."

THE SHAPE OF THE DECISION

In this account of the agricultural production program, the writer has attempted to set out the most serious conflict involved—that between two plans for United States agriculture, attainment of both of which is being attempted at once. In so doing, other aspects of the agricultural production program have been neglected. There is the case of the small farmers, whose production capacity might be considerably increased. Toward this end the Farm Security Administration has been working.[23] Further, there is the effort to shift and increase agricultural production through supported prices.[24] As this is written, therefore, the agricultural production program, insofar as it is bound up with the activities of the Commodity Credit Corporation (as well as of the Office of Price Administration and the Office of Economic Stabilization), presents an unclear picture, which, however, one feels is about to be brought sharply into focus.

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[23] See John D. Black, testimony before the Tolan Committee, Feb. 13, 1942; also Rainer Schikele, "Obstacles to Agricultural Expansion," *Journal of Farm Economics*, May 1942.

[24] On April 3, 1941 Secretary Wickard announced guaranteed prices for dairy products, hogs, chickens, and eggs. In July 1941 the Steagall amendment to the AAA legislation authorized the Secretary of Agriculture to announce a price at not less than 85 per cent of parity, "or comparable price therefore," whenever he deems it necessary to expand the production of a product. (See John D. Black, *Parity, Parity, Parity*, pp. 34 ff) When the announcement of the January 1942 goals was made, it contained a list of supported commodities and the supporting steps taken (see press release of the USDA, Jan. 16, 1942). These operations tie in with the activities of lend-lease and of the AMA. See articles by Charles Burton Marshall and Frederick V. Waugh, in this volume.

Prices guaranteed for peanuts under the Steagall amendment called forth considerable controversy. See Hearings, Agricultural Subcommittee, House Committee on Appropriations, 77th Cong , 2d sess., pp. 966 ff.

In addition, the Commodity Credit Corporation has pursued a policy of selling government-owned stocks of the basic commodities (i.e., selling from the Ever-Normal Granary) at prices less than parity. The controversy surrounding this procedure was heightened by direct subsidization operations here in October and November 1942. (Consult the Hearings, *op. cit.*, both House and Senate, index.) This controversy flared up in June and July 1942, resulting in a compromise permitting the Commodity Credit Corporation to sell 125,000,000 bushels of feed-wheat at 85 per cent of corn parity. (*New York Times*, July 23, 1942.) Following the legislation of Oct. 2, 1942 and the creation of the Office of Economic Stabilization, the Commodity Credit Corporation has begun another program of subsidization of wheat for feed. (*New York Times*, Oct. 23, 26, 1942.) As this is written, a congressional investigation is in prospect regarding the scope of the Commodity Credit Corporation's authority. (*New York Times*, Nov. 8, 1942.)

How might this be done? Perhaps by the creation of a food administration with complete powers over food production and distribution. Such a step would cut the Gordian knot described in the previous paragraph.

Another question suggests such a step. That is: Why has the Department of Agriculture not announced the 1943 goals? Goals for 1942 were published in September 1941. Some goals for 1943 have been announced, as we have seen. There have been opportunities in 1942, e.g., in a Chicago meeting of the AAA in June, and in the late-October Outlook Conference in Washington. The occasion will have to come soon, for farmers must know what the Nation expects of them in order to make their plans for 1943. Meanwhile, commodity committees are meeting upon the goals program.

It appears that Secretary Wickard has postponed the announcement, first, because he desires the release to come from the Secretary's office, and not, for example, from an AAA conference; second, because he wishes to hold off as long as possible until the accumulated need for the announcement may be capitalized into popular pressure behind the sanctions he wields to get the goals he asks for; third, because the Food Requirements Committee is working up a statement of over-all food and fiber needs for 1943, for the armed forces, lend-lease, the Board of Economic Warfare, and civilian United States. These findings will give a picture as definitive as possible of the requirements. Immediately afterward, it will be good strategy to announce the goals program.

But this "playing up the river," to use the idiom of poker, is a dangerous game. Pressure for a food administration increases.[25] Recently an order to establish one was said to be in draft, and prospective administrators were named. The pressure comes now from the War Production Board.[26]

The last development would mark a defeat for the Department of Agriculture. Would it improve the food production program of the country? If complete authority were thrown into the WPB, conflicting jurisdictions would appear to be cleared up. Senators Aiken, "Cotton Ed" Smith, and the rest might not be greatly impressed by the step. But it is probable that pressures which operate so effectively upon the Department of Agriculture simply are not organized to influence WPB policy in like degree. On the other hand, other pressures—particularly those of the food trade—would enjoy an enhanced position.

But the knowledge of agriculture is in the Department of Agriculture and in the State Extension Services. The capacity studies (state and national) of August show the high ability of these people to lay the groundwork of planning. The AAA has demonstrated its ability to carry through one kind of plan for agriculture. It is the writer's conviction that agriculture has the men and the knowledge to conceive, direct, and carry out the kind of food production program the country needs. This article has been an effort to show the major conflict involved. To cure this conflict, we need to cut away the limitations upon the agricultural program, primarily those found in the AAA statutes. But we should retain directional authority in the United States Department of Agriculture.

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[25] It has been long standing. Secretary Wickard attempted to counter the movement in September 1941, and his opposition has, of course, been consistent. But the food trades have wanted one; see George A. Mooney, *New York Times*, March 29, 1942.

[26] Charles E. Egan, "WPB Calls for a Food Dictator; Decision is Put Up to President," *New York Times*, Oct. 30, 1942.

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Production and Marketing of Fruits and Vegetables

By Harry R. Wellman

THE growing shortage of labor, materials, and transportation facilities points toward a diminution in the Nation's output of fruits and vegetables from the high levels of recent years. Furthermore, civilian consumption is likely to be restricted even more than total output, because of the large military and lend-lease requirements. To prevent supplies in consuming markets from falling to critically low levels as the war proceeds, numerous adjustments in production, processing, and marketing will be required. This paper presents a brief summary of the present supply situation, points out some of the obstacles to the maintenance of supplies, indicates some of the steps that are being taken to overcome these obstacles, and suggests further steps that may be needed.[1]

CURRENT LARGE PRODUCTION

Production of fruits and vegetables in the United States has been at a high level in recent years. From 1937 to 1941, production of fruits averaged 28 per cent larger than in the preceding five years, truck crops 23 per cent larger, and vegetables other than truck crops 7 per cent larger. In 1941 fruit and vegetable production combined was the largest on record, while the 1942 output promised to be as large or slightly larger.

The record output in 1941 was produced and marketed without serious difficulty. The supply of farm labor, although not so abundant as in 1940 and preceding years, was nevertheless ample; and for the most part, farm machinery, repairs, and production materials of all sorts could be purchased readily. Wages of hired farm labor throughout the United States averaged about 22 per cent higher in 1941 than in 1940, and prices paid by farmers for commodities used in production averaged about 10 per cent higher. These higher costs, however, were more than offset by the higher prices received by growers. Prices of fruits averaged 17 per cent higher in 1941 than in 1940, while prices of truck crops averaged 26 per cent higher. Cash farm income from fruits and vegetables combined was 26 per cent greater in 1941 than in 1940.

Although the industry encountered considerably more difficulty in 1942 than in 1941, there was probably a record volume produced and marketed. Prices and returns for most fruits and vegetables substantially above those of the previous year encouraged growers to exert strenuous efforts to save their crops. Cash farm income from fruits and vegetables for the seven months, January through July 1942, was 50 per cent larger than in the corresponding period of 1941. Production expenses, particularly for hired labor, were also much higher, but the increase in cost was not sufficient to absorb the entire increase in gross income.

Under order of the War Production Board about one-third of the 1942 canned pack of fruits and vegetables and probably at least one-half of the 1942 pack of dried fruits were reserved for military and lend-lease requirements. Consequently supplies of these products for civilian consumption will be short, even though total output was the largest on record. It is altogether possible that civilian rationing of these items will be necessary before many months have passed.

As the war proceeds it seems probable that the obstacles to production and marketing of fruits and vegetables will become increasingly serious. Hence it seems doubtful that the present high level of fruit and vegetable production in this country can be maintained. Among the many obstacles to production and marketing which are likely to be acute in 1943 and subsequent war years, three are briefly discussed in this paper, namely: (1) shortages of labor; (2) shortages of containers, particularly of tin cans; and (3) shortages of transportation facilities.

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[1] My colleague, Dr. S. W. Shear, has assisted greatly in the preparation of this paper

SERIOUS LABOR SHORTAGE DEVELOPING

War industries and the armed forces are drawing many experienced agricultural workers from the farms. On the Pacific coast the evacuation of Japanese has also contributed to the exodus. Shortages of farm labor have resulted in some crop losses in several localities, but to date the aggregate loss has not been large, partly because of strenuous efforts to recruit workers from sources not customarily tapped for farm help.

In no other line of agricultural production, with the possible exception of dairying, is the shortage of labor likely to be as serious as in fruits and vegetables. Their production requires large amounts of labor per acre, and on the specialized farms which occupy a dominant position in the major commercial areas, much of it must be hired. On a 20-acre peach orchard in California with a yield of 10 tons per acre, the operator himself is able to do only one-third of the manual labor that must be performed in producing and harvesting the crop. The chief reason why so much hired labor is required on specialized fruit and vegetable farms is that the necessary operations are highly seasonal. Unless these operations are carried out within a relatively short period of time, the entire crop may be lost. In California, vegetables require on the average ten times as much seasonal labor per acre as field crops, and fruits about eight times as much.[2]

Attempts to meet the current and prospective shortages of farm labor are being made chiefly in two directions: one looking toward the use of persons not normally employed in agriculture, and the other toward a decrease in the need for hired laborers.

Adult women and boys and girls of high school age are being mobilized to work in the fruit and vegetable harvest and in packing plants. The experience to date with this type of labor naturally has varied greatly, but on the whole seems to have been fairly satisfactory. However, more orderly procedures are needed for recruiting and training these workers, and in many instances substantial improvement in working and living conditions will have to be made if this potential labor supply is to be fully utilized.

Underemployed farm operators also constitute a potential labor supply of considerable magnitude, little utilized as yet. Of the six million farm operators in the United States, some two million are on farms too small to provide them with full-time work.[3] For the most part, the small, low-income farmers are experienced workmen. They could contribute much more to the war food production program than they are now doing.

Recently an agreement was reached between the governments of this country and Mexico which may result in the importation of a considerable number of farm workers in 1943.

Largely because of the fear of an even more acute shortage of farm labor in

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[2] R. L. Adams, "Forecast of Seasonal Labor Requirements for California Crops, 1942," Giannini Foundation of Agricultural Economics Mimeographed Report (unnumbered, May 1942), pp. 6–11.

[3] Philip G. Hammer and Robert K. Buck, "Wasted Man Power in Agriculture," *Land Policy Review* 5 (4): 9–18, April 1942.

1943 than was experienced in 1942, many farmers are seriously considering shifting from crops which require large labor input to those which can be produced with less labor. While the high capital investment in trees will tend to prevent much shift out of fruit production, a similar deterrent does not exist in the case of vegetables.

COMMERCIAL CANNING AND TIN

In the canned food industries, among which canned fruits and vegetables are of major importance, shortages of tin and steel for the manufacture of tin cans are causing much concern.

About one-half of the tin normally consumed in this country is used in the manufacture of tin plate, most of which goes into tin cans. Japan now controls the great tin mines of the Far East, which normally contribute about two-thirds of the world's production and over 90 per cent of United States imports. The only other large known sources of tin are in Belgian Congo, Nigeria, and Bolivia.

Fortunately, the stockpile of tin in this country at the close of 1941 was the largest in our history, amounting to around 115,000 tons—about fourteen months' supply at the 1941 rate of consumption. Had it not been for the farsightedness of both government officials and private companies in building up this stockpile, the Nation's tin supply today would be most critical.

Since the attack on Pearl Harbor, the War Production Board has taken rather drastic steps to curtail nonessential uses of tin. This metal has been entirely prohibited in the manufacture of many items, including containers for beer, dog food, pork and beans, noncondensed soups, cereals and flour, petroleum products, spices and condiments, and tobacco. Furthermore, its use has been curtailed in the canning of many fruits and vegetables, such as apples, apricots, cherries, beets, carrots, pumpkin, and squash. Two further steps have been taken to reduce the amount of tin used in the manufacture of tin cans. Small cans have been discontinued and the thickness of the coating of tin on all cans has been reduced. It is estimated that altogether the reductions in the use of tin plate for cans thus far put into effect saved about 18,500 tons of tin in 1942.

A very considerable saving of tin could be made by using electrolytic tin plate for some products and chemically treated black plate for others. Present plans call for a large increase in their use for making the ends of cans. In making the bodies of cans, however, their use will be restricted until methods are perfected for soldering the side seam with little or no tin on the edges that are joined.

Additional supplies of primary tin should come from the smelter now being constructed in this country with a capacity of 52,000 tons of tin a year, which is intended to operate on Bolivian ore. This tonnage would go far toward meeting our more urgent needs, but a shortage of boats may prevent the importation of sufficient ore.

Some increase in the quantity of secondary tin may be secured by detinning scrap cans, but any large supply from this source will require the building of new plants and the solution of the vexing problem of collecting cans on a large scale.

Some additional restrictions on the canning of fruits and vegetables may be necessary in 1943. The year 1942 will probably have reduced the Nation's stockpile of tin by about one-half, and military operations, including the packaging of food for expeditionary forces, will probably require more tin in 1943 than in 1942. The extent to which the reduced stockpile can safely be drawn upon for the manufacture of tin cans for civilian use will be influenced by the success that is achieved over the coming months in securing new tin from Bolivian ore and in expanding the use of electrolytic tin plate and black plate. Steel rather than tin may turn out to be the limiting factor in the manufacture of tin cans.

Partly because of the shortage of tin cans, more emphasis is being placed upon drying, and particularly upon the dehydration of vegetables. This expansion is also favored because of the great reduction in bulk secured, which is an important factor in economy of transportation of both military and civilian supplies.

LONG HAULS NECESSARY

Transportation is one of the serious shortages facing the Nation that may curtail supplies of many commodities in consuming centers.

Fresh fruits and vegetables are perhaps more vulnerable to a shortage of transportation facilities than are most other classes of agricultural products. Because they are highly perishable and cannot be held long in storage, many of them must be moved to the consuming markets immediately upon harvesting. Also, since most of them are bulky, many cars are required for their transportation. Furthermore, a considerable proportion is produced in areas far removed from the major consuming markets, and hence must be hauled long distances.

While fruits and vegetables are grown widely throughout the United States, the major commercial producing areas are confined to comparatively few states, such as California, Florida, and Texas, most of which are distant from the great population centers. The average rail haul of fresh fruits and vegetables of about 1,400 miles is much longer than for most other agricultural products.[4] During the five years 1934–38, the three Pacific states contributed 40 per cent of the Nation's production of fresh fruit, but contained only 7 per cent of the Nation's population. Much of this fruit moved by rail to eastern markets over a distance of from 2,000 to 3,000 miles. During the calendar year 1941, for example, New York City alone received over 26,000 carloads of fruit from California, Oregon, and Washington.

Citrus fruits from Florida and Texas also must be transported long distances, although the average haul from those two states to the major consuming markets is less than one-half as long as from California.

Commercial acreage of truck crops for market is also concentrated in a few states. The three leading states—California, Texas, and Florida—together contained 43 per cent of the Nation's acreage in 1940, and California alone containing 20 per cent. Other important producing states are New Jersey, Georgia, New York, South Carolina, North Carolina, Colorado, and Arizona. The ten listed accounted for 84 per cent of the country's acreage of commercial truck crops for market in 1940, but only two of them are located in the most highly concentrated population area of the country.

Potatoes and sweet potatoes combined, fortunately, are fairly evenly distributed among the various regions of the country in accordance with population, so that the average length of haul to consuming markets is much less than for most other vegetables.

MOTOR SHIPMENTS

The past decade has witnessed a large

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[4] Clifford C. Matlock, *Trends in Railroad Traffic, Freight Rates, and Prices: Perishable Agricultural Commodities, United States* (U. S. Bureau of Agricultural Economics, May 1941), pp. 7–8.

increase in the shipments of fresh fruits and vegetables by truck. In 1941 about 43 per cent of all New York City receipts arrived by truck, as compared with about 13 per cent in 1929. A similar trend has occurred in other large cities. Of the total receipts of fruits and vegetables in twelve large markets during 1941, 44 per cent arrived by truck. While most of the truck receipts came from nearby producing areas, nearly 15 per cent originated more than three hundred miles away.[5]

With the serious shortage of rubber, considerable reduction in the transportation of fruits and vegetables by truck seems inevitable. Whether the prospective loss can be fully offset by an increase in rail traffic is uncertain. Total rail and boat shipments of fruits and vegetables during the ten years 1932–41 fluctuated around 800,000 cars annually, but for each of the six years prior to 1932 they exceeded a million cars. Thus, the railroads once carried a much larger volume of fruits and vegetables than at present, but that was during a period when traffic connected with military affairs was negligible. The greatly increased movement of military personnel and supplies is already straining the capacity of the railroads, and yet this type of traffic may be expected to increase.

Some increase in the tonnage of fruits and vegetables hauled by the railroads could be secured with present equipment by curtailing cross hauls. Casual study of the carlot unloads in the principal consuming markets by months and states of origin suggests the possibility of a substantial gain. Effective utilization of the return haul is a significant factor in reducing transportation mileage on perishables grown long distances from market, as on the Pacific coast. Variation in the nutritive value of different kinds of fruits and vegetables should also be given proper consideration in adjusting production and shipments to transportation and labor shortages.

LOCAL PRODUCTION

As a means of reducing the need for transportation, consideration might well be given to the possibilities of growing a larger proportion of the Nation's vegetables closer to the centers of population. This would mean a decrease in the off-season supply of fresh vegetables, but this could be replaced in part by an increase in home canning.

Widespread development of home gardens in both rural and urban areas would help materially in maintaining a good level of vegetable consumption in this country. Many families could grow a substantial proportion of the vegetables which they annually consume, without loss of time from other productive work. This would release some workers now engaged in commercial vegetable production and also save transportation and handling. More vegetables could be grown for home canning as well as for fresh consumption, and this would permit some saving of tin and steel. Although planting of home orchards is not feasible as a short-run measure, production of berries and of some vegetables like tomatoes would serve partially to replace fruit.

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[5] U. S. Bureau of Agricultural Economics, *The Marketing and Transportation Situation* (Aug. 1942), p. 9.

Production and Processing of Dairy Products

By Warren C. Waite

THERE is no doubt, from a nutritional viewpoint, of the need for expanded milk production in the United States. Even before the war demands, conservative estimates indicated that to raise just the poorer diets to a reasonably satisfactory level would require an increase in our total consumption of 10 to 20 per cent in milk and 10 to 25 per cent in butter. An adequate margin of safety would require somewhat more. The war has increased requirements in two ways. The determination of the Army to provide adequate dairy products for a high level of nutrition will materially increase the consumption of several million men. We are also faced with large requests from our allies for dairy products to sustain their populations. Moreover, dairy products promise to be important in any nutritional rehabilitation we may undertake after the war. There thus appears to be a nutritional need for whatever quantities of milk we may be able to produce in this country in the predictable future, while the limiting factors on the supplies available are physical and economic in character.

During the past few years, milk production in the United States has been at the highest levels ever reached. In 1941 estimated production was 115.5 billion pounds. About one-fifth of this milk was used on the farm where it was produced, and the rest was sold as milk or used in the production of other products sold off the farm. These sales of 94 billion pounds were made up about as follows: 52 billion pounds of milk sold at wholesale, 34 billion pounds sold in the form of cream at wholesale, nearly 6 billion pounds as milk and cream at retail by farmers, and over a billion pounds used in the homemade butter sold from the farm. Viewed geographically, milk production is greatest in the North Atlantic and North Central states, with this region providing nearly seven-tenths of our entire production. Production is lowest in the west and south, except for scattered areas adjacent to cities and in the territory immediately bordering the Pacific coast.

The most important deficits in the consumption of dairy products in our own country appear to be in fluid milk consumption among children in the low income groups. The kinds of dairy products required by our allies are principally the products utilizing the whole milk. The need there is for proteins and minerals which can be supplied in most concentrated form by evaporated milk, cheese, and dry milk. Fats, while valuable, are not so essential, and appear to be more cheaply available from other sources than our butter. It may be pointed out in passing, however, that more energy per cubic foot of cargo space can be transported in the form of butter than in any of the other foods. These requirements set the major characteristics of the problem. In general, there seem to be two possibilities: the first is to secure a larger total milk output for the country as a whole, and the second is the diversion of milk from butter production in the areas where skim milk now remains on the farm to the production of products where all the milk is utilized.

Milk Utilization in Various Areas

Our ability to secure supplies of the various types of dairy products depends a great deal upon the manner in which milk is utilized in the different areas in the United States, since these utilizations determine in large part the principal supply areas for the various products. Condensed and evaporated milk require a dense production of good milk and fit in well in the handling of the seasonal and reserve surpluses of large milksheds. Hence there is a heavy concentration of production in such areas. For example, the leading states in the production of evaporated and condensed milk, and their proportion of the total production in 1940, were as follows: Wisconsin 32 per cent, Ohio and California each 10 per cent, Illinois and New York each 6 per cent, and Michigan 5 per cent.

The production of powdered milk, especially that for human consumption, also tends to be associated with fluid milk markets. This is because the fluid cream required generally comes from milk separated in plants in territory surrounding the city. Wisconsin has the largest number of plants of any state. Large quantities of milk are separated at creameries and receiving stations in that state for cream shipments to Milwaukee, Chicago, and other cities. New York is second in number of plants, and other important states are Michigan, California, Ohio, and Pennsylvania.

Cheese manufacture is the most concentrated geographically of any of the processing of dairy products. More than half is located in Wisconsin. There is a secondary producing area in the west, centering in Oregon, and there has been some expansion of cheese production in the southern states. Over a period of time the principal cheese producing territory has shifted west from New York as the factory production of cheese developed. As a result of this movement and because cheese furnishes an outlet for surplus milk of the city milk markets, a scattered production has remained along the path of this movement. The states following Wisconsin in order of importance in 1940 were Illinois, Indiana, New York, and Oregon.

Butter production is largely concentrated in the West North Central states, with Minnesota, Iowa, and Wisconsin contributing more than two-fifths of the total. Another area of importance is in the southwest. In contrast to other dairy products, butter production tends to be carried on in areas in which it is almost of sole importance and where whole milk production per unit of area is lower. This is because of the high concentration of the product in terms of the original milk and because somewhat less care is required in handling the milk and cream used in its production than is the case with other products.

DIFFICULTIES IN EFFECTING INCREASED MILK PRODUCTION

It is likely to be difficult to secure much of an increase in milk production in the United States during the next few years. An increased milk production requires either an increase in the number of cows milked or an increase in the output per cow or some combination of the two. In either case there will also be an increase in the amount of feed required. In view of the increased feeding required by the expansion of other types of livestock, feedstuffs are likely to be reduced rather than more abundant during the next few years.

An immediate expansion would require the securing of more milk from the existing cow population. This would necessitate better handling and more grain fed to cows than the practices ordinarily followed by farmers at the present time. It appears that roughly for the United States as a whole, about one pound of grain is fed for each three pounds of milk produced. This varies, of course, from rations where no grain at all is fed to very heavy grain feeding in some of the market milk areas. Increased milk production, however, would be much more costly in terms of grain than the current rate of production relative to grain, because of the declining rate of increase of milk production accompanying heavier grain feeding. Studies of Jensen and others show that even when cows are fed moderate grain rations, not more than 100 pounds of additional milk will be secured from 100 pounds of additional grain. These data make it evident that securing more milk from existing herds is a costly process. For example, with corn and barley at $1.00 a bushel and oats at 60 cents a bushel in Minnesota, which are approximately the present parity prices, it appears that a butterfat price of over 55 cents a pound would be required to permit an increase of the ordinary rate of grain feeding in that area.

Over a longer period of time, and at a slower rate, increases in output may be more economically secured. For the long run, the principal increase will probably need to be brought about by an increase in the number of cows milked. Expansion in cow numbers in the past has never been very rapid. The largest sustained increase appears to have been between 1929 and 1935, when an average rate of increase of around 3.5 per cent a year was attained. This increase, however, took place under very special circumstances, since the latter part occurred during the early depression period, when cows had virtually no sale value and were retained in the herds longer than usual.

Milk production per cow in the United States has increased over a period of years because of the improved productive capacity of cows and better feeding practices. There are continued gains to be expected in this direction, but these gains cannot be expected to be very rapid. The longest sustained increase in milk production per cow during the period for which estimates have been made was between 1934 and 1941, when the increase was somewhat less than 3 per cent per year. With such small changes in cow numbers and in milk production per cow, it is natural that the variation in total milk production in the United States is small. Even with favorable feeding ratios it seems improbable that total milk production in this country will increase more rapidly than say 5 per cent a year for more than a few years at a time.

DIVERSION OF MILK SUPPLY

In view of the difficulties of securing increased milk production it is necessary to consider the possibilities of diverting milk to the production of whole milk products in the butter producing territories. The areas of densest milk flow in these territories lie in Minnesota, Iowa, and Wisconsin, and it is diversion of milk use in these territories that offers the best prospect of an increase in processed whole milk products.

This change would require some plant conversion for handling fluid milk rather than cream, but much more important is the reorganization of the animal enterprises on the farm in which skim milk has become important as a feed. Dairy production, especially in Minnesota and Iowa, is closely integrated with the production of hogs where the skim milk retained from the farm separation of cream is utilized as a valuable feed for young stock. Sale of whole milk would thus necessitate the purchase of other high-protein feed as a supplement, or a sacrifice of the scale of the hog enterprise, or a depreciation in the quality of the young stock.

Moreover, the farmer would be confronted with added costs, because whole milk is bulkier to handle than cream, and the farmer would probably require a larger investment in equipment for handling and cooling. Quality standards for milk delivered to cheese factories and dry milk plants are more exacting than for cream delivered to creameries, and this calls for extra effort in handling the milk and in improving the sanitary conditions of barns and dairy equipment.

It is thus evident that a considerable price inducement would be required to have farmers in these areas shift to the delivery of whole milk.

The simplest diversion in this territory is for the creameries to receive whole milk, continue to manufacture butter, and utilize the skim milk in the manufacture of dried skim milk. The production of both cheese and evaporated milk faces serious technical difficulties. Condenseries require for efficient operation a much larger plant and more investment in plant and equipment than do either cheese factories or creameries. They also require considerably more milk for their operation. This, together with the difficulties of securing equipment for new plants and the technical skills required for their efficient operation, will restrict their establishment. Expansion of cheese production in these areas will be restricted by the high quality of milk required for good cheese and the skill required by the operator. The small size of the earlier cheese factories and their apparently simple manufacturing operations have led many to suppose cheese production easy of expansion. Recent experience has, however, shown the importance of good milk and skill, and a number of newly begun cheese operations have proved incapable of producing cheese of desirable quality.

CONCLUSION

It thus does not appear probable that much of an increased milk flow will be secured in the next few years, and it is possible that 1942 may be the peak for some time. High prices of beef will induce heavier culling and high livestock prices feed diversion, while labor costs will hold down expansion and perhaps curtail herds in many places. Any considerable expansion of production appears to face heavy economic costs, and would require some form of subsidization. The cost of a subsidy to increase milk production is probably so great that it would be an uneconomical use of resources. This means that we must have very careful administration of our supplies and maintain production as long as possible. Manufactured whole milk products will continue to be drawn from the present producing territories and it is especially necessary to maintain milk flows there.

The best possibilities of increased market supplies lie in the shifting of milk from the farm to drying plants in the butter producing territory, for a production of both butter and dry skim milk. There are enormous potential supplies of skim milk for drying in the butter producing territory, something around 11 billion pounds in Minnesota and Iowa alone. Utilization of this skim milk in drying, however, encounters the difficulties of drawing it from important farm feed uses, and rather wide price differentials will be required. The shortages in dry skim milk for human consumption due to lack of machinery promise to be somewhat larger than those in either cheese or condensed milk caused by the requirements of our allies.

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Production and Consumption of Fats and Oils

By KARL BRANDT

AMONG the foodstuffs, fats and oils hold a peculiar position. While most of the industrialized nations have the tendency to increase the per capita consumption of fats whenever their people can afford it, they all retain the ability to get along with much less fats than they are accustomed to use, as long as they can make up the difference by carbohydrates. Like many other Asiatic nations, the Japanese have a diet in which fats account for only 6 to 10 per cent of the total caloric value. In the American, the English, and the German diet, fats amount roughly to 30 per cent of all calories.

Fats are the most concentrated form of energy-bearing foodstuffs. They have 2.3 times more net calories for unit of weight than pure starch, are almost entirely digestible, do not require any mastication to speak of, and give satiety for a longer period than any other foodstuff. Some fats contain a certain amount of one or more of the fat-soluble vitamins A, D, E, and K.

A convenient form of stored energy in plants and animals, fats and oils are to be found in practically every seed of plants as well as in eggs and milk and nearly every part of animal body tissue, no matter whether mammal, fish, bird, or reptile. Hence, they can be extracted from milk and from fatty animal body tissues, and from a multitude of seeds, some of which, the oilseeds, have an especially high content of fat. With such wide variety of oil-bearing raw materials, fats and oils are obtained from many sources, whose importance changes from country to country, with climates and soils, techniques of production and extraction, and uses and preferences based on specific qualities. The wide distribution of fats in organic matter is responsible for their unnoticed presence in many foodstuffs not primarily considered to be fatty substances. In the United States, only 48 per cent of the fats consumed as food is prepared or "visible"[1] fats, while 52 per cent is "invisible," a part of other foodstuffs.

Fats and oils are highly versatile in their utility, interchangeability, and convertibility. They are used most extensively as foodstuffs, but also as raw material for soap, glycerine, oil paints and other protective coatings, oilcloth, linoleum, printer's ink, core oils, tin and terneplate, and as lubricants, illuminants, and fuel for combustion engines. In war, splitting of fats into fatty acids for soap and glycerine for the manufacture of dynamite, cordite, and other war-essential materials adds to their importance. While each fat has its specific physical and chemical characteristics, and its particular preferential utility, most of them are more or less interchangeable, frequently only after certain processing which involves costs and leaves some difference in quality.

TRENDS OF CONSUMPTION AND PRODUCTION

With these basic technological characteristics of fats and oils in mind, it will be easier to grasp the opportunities for adjustments in the fats economy of different nations under conditions of war.

In the period between the two World Wars, considerable change occurred in the world's fats economy. In England and the industrialized countries of central and northwestern Europe, the per capita consumption of food fats increased considerably. Data for England, Switzerland, and Germany may illustrate this. In 1909–13 the English per capita consumption of total fat per day was 99 grams; in 1934 it was 124 grams. The Swiss statistical crude average of per capita consumption of butter, margarine, lard, and other cooking fats rose from 11.5 kg. in 1911 to 17.7 kg. in 1936–38. Between the two five-year periods 1909–13 and 1926–30, the average daily per capita consumption of fats in the whole diet in Germany rose from 826 to 961 calories, or by 15.3 per cent. In the latter five years, 30.6 per cent of total calorie intake consisted of "visible" fats.

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[1] The term "visible" fats is applied to separated fats, known as fats and oils in commodity trade, such as butter, lard, tallow, margarine, frying and cooking fats, and salad oils. "Invisible" fats are all fats contained in raw materials or foods, such as seeds, nuts, kernels, meat, eggs, fluid milk, cream, and so forth.

In the United States the human consumption per capita of edible fats increased only slightly over the last two decades, but industrial consumption rose sharply, particularly in soap manufacture. In 1941 two-thirds of all fats were used as food, one-third for industrial purposes.

All these shifts, in Europe as well as in the United States, had their foundation in the availability of increasing supplies of inexpensive fats from wild and planted palm trees in the tropics, from soybeans in Manchuria, whales in the Antarctic, fish in the Pacific and other oceans, and miscellaneous oil-bearing raw materials from many of the agricultural exporting countries For three-quarters of a century, Europe's industrial countries continued to curtail their domestic production of low-yielding and uncertain oilseed crops, and to give high-yielding hoe crops and fodder crops the preference. They imported, besides whale oil, low-priced oilseeds in large volume. The crushing of the oilseeds supplied the domestic market with inexpensive cake or meal which provided the dairy, beef, and pork industries with an abundance of feed protein. While the domestic production of butterfat, bacon, and lard increased, the oil for margarine and cooking fats came largely from overseas.

In the United States the high domestic output of animal and vegetable fats was supplemented by tropical fats mainly for soap manufacture and drying oils for oil paint.

FOREIGN TRADE BEFORE THE WAR

During the prewar period, this division of labor within the world's fats and oils economy showed the origin of exports and destination of imports as indicated in Table 1. As the table shows, Asia and Africa supplied 70 per cent of all exports, and the United States, the United Kingdom, Germany, and France absorbed almost 90 per cent of all imports.

The war interrupted the exchange of goods and services within the world's fats economy. To a certain extent, this was anticipated by the aggressors as well as by their future victims. Germany had made frantic efforts to close her "fat gap" by an import monopoly and by heavy domestic production of fats, including especially the cultivation of oilseeds, such as rape, mustard, poppy, and flax. She created a whaling fleet of her own which worked in the Antarctic, and she organized a corporation which contracted soybean acreage in the Balkans. Yet, after a gain of a few per cent in self-sufficiency, with an industrial boom in full swing and a growing army, domestic consumption increased faster than domestic production. Italy subsidized the processing of fats from such domestic waste products as grape seeds and rice bran, and boosted the production of butterfat, olive oil, and a wide variety of oilseeds, including castor beans, sesame seed, soybeans, peanuts, and hemp. Japan, having no real fat problem, was making considerable progress toward becoming the

TABLE 1—EXPORTS AND IMPORTS OF FATS AND OILS

Origin of Exports	Net Exports* (Billion lbs.)		Per Cent of Total		Destination of Imports	Net Imports* (Billion lbs.)		Per Cent of Total	
Asia:					Europe:				
Dutch East Indies	1.2		14		U.K.	2.8		31	
Manchuria, Chosen	1.0		11		Germany	2.3		26	
India, Ceylon	.9		10		Netherlands	.1		1	
Philippines	.8		9		Denmark	.2		2	
China	.3	4.2	3	47	France	.9		11	
					Italy	.3	6.6	3	74
Africa		2.1		23					
					America:				
South America		1.6		18	U.S.A.	1.9		21	
					Mexico, Central America	.2	2.1	2	23
Oceania		.7		8					
					Asia:				
All others		.4		4	(Japan)		.3		3
Totals		9.0		100			9.0		100

* Figures represent the fat equivalent of oil-bearing materials as well as fats.

world's leading whaling nation in the Antarctic.

By 1938 the Germans and the British began to outbid each other in the world market in order to build stockpiles for the approaching war. Each bought close to a quarter-million tons of whale oil. By 1939 Great Britain had bought all that was available.

WARTIME ADJUSTMENTS IN EUROPE

The Nazi-controlled part of continental Europe is cut off from the overseas supplies that amounted to 3.5 billion pounds per annum immediately preceding the war. Germany alone imported in the neighborhood of 2 billion pounds. She gained an appreciable compensation by occupying the Netherlands and Denmark, Poland, Lithuania, Latvia, and Estonia, all normally exporters of butter and pork fats to Great Britain. Such voluntary or forced imports contribute probably one-fifth of Germany's food fats. On the other hand, losses in protein from oilmeal residues have cut in on the animal fat supplies. Competent observers estimate that the total net reduction in fats supplies for the Nazi-occupied European Continent probably reaches 5 billion pounds, or from 30 to 40 per cent of prewar requirements.

The main adjustment to the fats scarcity in Germany takes the form of eking out supplies more effectively, distributing available supplies with utmost care according to war necessity and physiological need, restricting soap production, inducing thrifty use of all fats, and recovery of waste fats in households and even from sewage. Another major adjustment consists of requisitioning and importing from conquered countries. Finally, every effort is being made to maintain or increase production. The shortage of feed concentrates makes it difficult even to maintain the output of hog fats, tallow, and butterfat, but the system of forcing nearly all milk through creameries and distributing only skim milk has boosted at least the "visible" butterfat supply to record levels.

The acreage of oilseeds has been increased all over Europe. In the northern part, rape, mustard, poppy, flax, and hemp are grown; in the southeast, these and soybeans and sunflowers as well. High price premiums, special government-grower contracts, a bonus in oil and/or meal, and direct acreage assignments give the necessary incentive. Through their larger yield of feed protein, the increased oilseed crops supplant a certain part of lost feed imports. However, all oilseeds together yield not quite 3 per cent of the reduced food-fat requirements.

Yet fat supplies are far below the prewar average in every European country. The German food-fat ration for the whole nation, including the armed forces, was for the first thirty-one months 16.1 kg., or 35 per cent below prewar normal consumption of 22 to 25 kg. per person per year. Since April 6, 1942, this ration has been reduced to 15 kg. In Belgium the 1942 ration was slightly over 7 kg., or only 23 per cent of prewar consumption. Finland in 1942 had no more than one-fifth of her prewar rate available. In Poland the ration was one-tenth of that of a German normal consumer's ration. In general, rations outside the Reich are not only smaller and less stable, but frequently unavailable.

In the neutral countries, Sweden and Switzerland, Portugal and Spain, the fats situation is not nearly so unsatisfactory as it is behind the blockade. In Portugal, fats are not rationed. Spain exports olive oil to Italy. Sweden and Switzerland have been able to keep their average fats rations at levels which are slightly above or the same as those of Germany. Sweden keeps her cattle, sheep, and hog production up with an ever increasing subsidized production of feed cellulose, which is a by-product of wood pulp and has a feed value close to that of feed grain. In 1942 this supply was said to amount to 600,000 tons. In addition, feed yeast is also processed from wood. It serves as high protein concentrate.

THE SITUATION IN JAPAN

While the European Axis powers are undersupplied as to fats, and have to make strenuous efforts to get along with less, the Japanese have great surpluses. Ever since the conquest of Manchuria in 1930, and with large amounts of whale oil and fish oils for export, Japan has never had a serious fats problem other than one of placing her exports. In the conquest of the Philippines and the Dutch East Indies, of Thailand, Burma, and Malaya, and parts of Oceania, she wrested from Great Britain and the United States sources of about 2 billion pounds of annual imports of tung oil, palm oil, and copra, for which she has neither a market nor much use at home. The complete loss of the German, Dutch, and Danish markets for soybeans made the export surplus of Manchuria worthless and led to a restriction of soybean production by 40 per cent. Japan has ceased whaling in the Antarctic, and uses the whaling fleet either as tankers, submarine tenders, or minesweepers, which relieves her of finding a use for whale oil.

FATS AND OILS POLICY OF THE UNITED NATIONS

For the United Nations, the supply of fats required strong adjustments in response to the loss of fat-export areas, and more so to the development of ship shortages. Some of the United Nations have unexportable surpluses; others suffer from shortages.

China has only one tortuous road left open in northeastern India. Her valuable tung oil exports have stopped. The costly lacquer oil is used at home for lamps and common paints.

Russia was either self-supporting or

an exporter of fats, although her national diet contained only a small proportion of them. The loss of territory has deprived her of her best linseed, sunflower seed, soybean, butter, and bacon areas. Russia has lost a larger proportion of her national fats supply than of her population, 40 to 50 million of whom have been overtaken by the enemy. Despite a rapid shift of oilseed acreage more and more to the east, the loss of motor fuel and all the other handicaps to farming make it exceedingly difficult to make sufficient adjustments in domestic production. Hence the United Nations must send her from 500 to 700 million pounds of fats, mainly from the United States for shipping convenience.

The *United Kingdom* imports practically all her fats, except for a small percentage of requirements produced at home, as butter, lard, drippings, and tallow. During 1936–38 an average of 3.4 billion pounds (1,500,000 metric tons) net were imported, including about 12 per cent whale oil. The war eliminated the supply of whale oil, and cut off butter and lard from Denmark, the Netherlands, and the Baltic, and copra and coconut oil, palm oil, and various other oils from the Malay States, the Dutch East Indies, and the Philippines. The British Ministry of Food has adjusted the fats economy by allocation of imported fats to all of their uses, by rationing of food fats, by drawing on war reserves, by restriction of soap manufacture, by conservation of glycerine, and by purchasing more fats in some countries. West Africa alone supplies close to half of the reduced total import requirements. Australasia, India, and Ceylon are the source for about 30 per cent. The rest has to come from the United States. The real problem is shipping. However, as more and more fighting forces of the United Nations take up battle positions in distant parts of the globe, more return cargo space must become available. So far, the British ration of butter, margarine, and all cooking fats has been maintained at a level of 8 ounces per week since 1940, with some temporarily increased allotments.

In the *United States* the war has created a serious fats and oils problem. Before the war the country was 85 per cent self-supporting. Due to the loss of access to the Philippines and to other Japanese-occupied territories in Asia and the western Pacific, imports which amounted roughly to 1.5 billion pounds during 1935–39, and to about 1 billion pounds in 1941, will shrink to 400 or 500 million pounds or less. Exports, including those on lend-lease account, will range between 1.5 and 2.0 billion pounds, instead of 300 million in 1935–39 or 600 million in 1941. In spite of her former net-deficit status, and in contrast to the policy in Nazi-controlled Europe, the United States has chosen not curtailment of consumption but increase in production as the chief adjustment. In the fall of 1941 production goals for 1942 were drastically raised. After Pearl Harbor they were lifted still higher. America's farmers responded generously, and good weather secured high yields. As a result, domestic production during the crop year 1942–43 will very nearly hit the 12-billion-pound mark, or more than 2 billion pounds above the output of the 1941–42 crop year, and more than 50 per cent above the 1936–40 average.[2]

This output will include 7.7 billion pounds of animal fats, and 4.2 billion pounds of vegetable fats. The 1942–43 crop will probably yield 22 per cent more cottonseed, 33 per cent more linseed, 74 per cent more soybeans, and 90 per cent more peanuts for crushing.

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[2] Cf. U. S. Dept. of Agriculture, Bureau of Agricultural Economics, *Fats and Oils Situation*, August 1942, p. 3.

It will create superabundance of protein feeds and thereby enable the farmers to produce more animal fats also.

In spite of this huge increase in production, the fats and oils situation remains tight, because in addition to very large lend-lease requirements, domestic consumption tends to rise beyond the record level of 1941. Food consumption was then 11 per cent and total industrial consumption 43 per cent above the 1935–39 average. Consumption, especially in industries, has a tendency to rise further, mainly in response to the rising purchasing power, but also because retail prices of fats are frozen by ceilings at a relatively low level. The War Production Board issued a conservation order, effective September 1, 1942, to all fats and oils processing industries, which allocated fatty raw materials for the initial period up to December 31. This allocation to major groups of usage restricted the aggregate national consumption to approximately 90 per cent of the average for the same quarter of the years 1940 and 1941, with deviations above and below 90 per cent for certain products, and complete exemption from quotas for butter. If the thus adjusted civilian consumption plus requirements for the armed forces and exports should still exceed production, stocks could be reduced temporarily.

If the relatively slight curtailment of civilian food-fat supplies should lead to hoarding and maldistribution, consumer lists and finally card rationing would become unavoidable, though the rations would be very adequate, in the aggregate still equal to former peacetime consumption levels.

The real risk in the American fats and oils situation lies in the possibility of a drought in the United States in 1943 or later years of the war.

At present, the United Nations are succeeding remarkably well in keeping their people and their industries supplied with fats and oils, although English and Russian rations are considerably below prewar consumption levels.

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Livestock Production and Processing

By H. C. M. Case

ALTHOUGH imperfect in operation, the production of meat animals and the processing and distributing of meat and meat products are highly coordinated. Any marked change in the volume or date of marketing will interfere with established practices and economy in processing and distributing the final product to the consumer. Any direction given the production of meat animals, therefore, needs to be thought out more carefully than has been true in the past with reference to its effects upon farmers, processors, and distributors if established balance and economy of operation are to be maintained.

The economic importance of the whole problem of producing and processing meat animals is indicated in the fact that from 1929 to 1937 the value of the products of meat packing led the leading manufacturing industries of motor vehicles, steel works, rolling mills, and petroleum refining, in the order named.[1] From the farm standpoint, the total value of cattle, calves, sheep, lambs, and hogs sold normally represents more than 25 per cent of the cash farm income of the United States.[2]

The impacts of the war upon agriculture have been only partly realized, either in terms of the effect on volume of production or with respect to the problems encountered. The continued upward trend in the prices of livestock and livestock products has encouraged expansion in output. Some farmers increased their production more promptly than others in response to patriotic and economic motives. A highly selected group of six hundred north central Illinois farmers increased their production of animal products in 1941 over that of 1940 by the following percentages: pork 15 per cent, milk 7 per cent, eggs 18 per cent, beef 11 per cent.[3] These increases were made possible in part by an increase of 20 per cent in the production of grain in 1941 compared with that of 1940 on these same farms. Although not all farmers reacted as quickly as did this group to the impetus for increased production, these increases are indicative of the ability of the Corn Belt farmers to expand production.

Farm Labor Situation

The farm labor situation was not a serious factor to the livestock producer until late 1942. Interviews with many farmers concerning the food production program indicate a mixed reaction to the labor situation. While some farmers say that if they had less livestock they could handle their crop production, others, especially among the older farmers, say that they cannot stand the continuous field work of driving a tractor and other operations typical of highly mechanized production, and that they can make their best contribution by handling more livestock. Even among dairymen, many herds are being sold because of labor difficulties. Many of the cows are being absorbed in the local community up to the present, indicating that some farm families with considerable available family labor are enlarging their livestock operations. At the moment, however, there is indication that dispersal sales of dairy herds due to labor difficulties, especially of herds adjacent to large cities and defense areas, represent a net reduction in cow numbers. Thus, we have a mixed situation in livestock production which is rather difficult to interpret.

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[1] Based on the *Census of Manufacturers, 1889–1939.*

[2] Based on data from the December 1941 issue of *The Farm Income Situation.*

[3] *Report of Farm Bureau, Farm Management Service for Illinois,* 1941, Urbana: College of Agriculture.

As labor shortages become more acute, it may be expected that the production per acre, whether in terms of feed or of livestock production, will tend to decline. Laborers who replace those who have been accustomed to handling all types of farm equipment are not going to be so well versed in its use, maintenance, or repair; hence, lower efficiency is bound to result.

Over against this situation, we came into 1942 with an abundant carry-over of feed crops; 1942 was a favorable production year, with one of the most abundant corn crops on record, large production of protein concentrates, and abundant supplies of forage crops. This will tend to maintain agricultural production well into 1943.

PROBLEMS OF THE CATTLE FEEDER

Farmers are now faced with an unfavorable relationship between prices for stocker and feeder cattle and feeder sheep and the prices for slaughter animals. There is always at least a nominal competition between the packer and the farmer-feeder for the purchase of range-produced cattle and sheep.

Except for the cattle and sheep produced on the farms where they are finished for market, the profit of the Corn Belt feeder is largely dependent upon the cost of feed and the margin between the prices of feeders and of the finished animals which he places on the market. A practical immediate problem is, will there be an adequate margin between the price of feeders and the price of finished animals to justify the farmer's entering the feeder market this year?

With the price of lightweight feeders as high per pound as the farm price of finished animals of the best grade, the farmer is dependent largely upon relatively cheap feed for profit in his feeding operations. The Corn Belt feeder is aware of the fact that the range country has had an unusually favorable grazing season and that cattle and sheep from the range are in good flesh, which means that there is less opportunity than usual for cheap gains when they are put on feed in the Corn Belt. He is aware, further, that more cattle will be slaughtered directly from the range without going into Corn Belt feed lots, because of the keen demand for meat at the present time. While price ceilings are a matter of immediate concern to many people, the Corn Belt cattle feeder is more concerned with prospective price ceilings six months or a year hence, when he will have his cattle ready for market. A lowered price ceiling effective at the close of the feeding period could easily ruin the chance of profit in cattle feeding.

The farmer, however, whose operations are always somewhat of a gamble as far as the market is concerned, tends to accept on faith the fact that the markets will not be artificially interfered with in such a way as to destroy the profit from future marketing operations. For the present, it may be said that Corn Belt farmers are still buying feeder cattle in competition with the packers, who have stepped up their bidding for the grass-fed cattle from the range. In fact, for the first nine months of 1942, the total movement of western cattle to Corn Belt farms through central markets and direct sales compared favorably with that of 1941 in Illinois, although the situation appears spotted in other areas.

With the increased demand for meats, it is important that the Federal authorities keep faith with the farmer so that he may plan his production operations with some assurance of market stability until his product reaches market even a year hence.

TABLE 1—BEEF STEERS SOLD AT CHICAGO[4]

Grade	August 1942		August 1941		August 1937–41 Average	
	Numbers	Per cent	Numbers	Per cent	Numbers	Per cent
Choice and Prime	28,631	27.4	42,522	47.1	36,448	45.07
Good	55,513	53.0	38,344	42.4	32,725	40.47
Medium	19,413	18.5	8,679	9.6	8,978	11.10
Common	1,113	1.1	818	.9	2,717	3.36
Total	104,670	100.0	90,363	100.0	80,868	100.0

As the war wears on, however, if supply and demand factors continue to operate in the market in a normal way, it is to be expected that some changes in the finish of cattle being offered on the market will take place. With the current demand for beef, the selling price of lower-finished cattle is not far below that of highly finished cattle. In fact, the margin is so narrow that it will discourage the high finishing of many cattle unless ceiling prices recognize grades of beef. This is shown in Table 1.

IMPETUS TO HOG PRODUCTION

The reduced margin between highly finished and medium-finished cattle, leading to the sale of cattle on a less highly finished basis, makes possible the most effective economy in the use of feed among all classes of meat animals. The excessive fat on the Prime steer adds little to the real nutritive value of the carcass, and the fat is not effectively recovered in the kitchen. The tendency toward less highly finished beef, therefore, has the double advantage of conserving feed grains and reducing the risk of the feeder accompanying long feeding periods.

The farmer's decision as to the degree of finish he will put on cattle cannot be fully interpreted without considering his opportunities to produce other products. The situation with respect to sheep is not greatly unlike that of cattle, either from the standpoint of the ability of the market and the processors to handle all the sheep sent to market or from the standpoint that the farmer is concerned with the margin between the purchase price and the selling price of lambs. With feeding margins narrowed, the farmer is concerned with alternative opportunities to dispose of his feed crops.

As long as favorable feed-animal price ratios continue, farmers will increase total meat production, but the increase will come in hog rather than in cattle or sheep production. No other class of livestock affords like elasticity of increasing and decreasing production in response to demand. The ratio of offspring to breeding animals, the relatively short gestation period, the wide acceptable range in finished weights, the relatively small amount and cost of housing and equipment, and the relatively small amount of labor relative to total cost all contribute to this end.

If the expected price control bill is enacted into law establishing parity prices and limiting the ceilings on prices of individual commodities to levels already attained, it will provide added impetus to hog production. The feed-hog ratio on this basis will stand at about 100 to 150 compared with a ratio of 100 to 130 for cattle and 100 to 104 for butterfat.[5] This favorable price ceiling on hogs, therefore, will help to adjust the production of all classes of meat animals to the most economical use of grain feeds, although it may lead to too much emphasis on hog production. These points merely indicate that the thoughtful farmer will be making decisions based on cost and price relationships, which have not seriously concerned him in the recent past because of the upward trend in prices.

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[4] Source: *Livestock Meats and Wool Market Reviews and Statistics,* U. S. Department of Agriculture.

Looking into 1943, labor shortages, reduced efficiency, abundant feed supplies, uncertainty of market relations, especially in relation to ceilings, less highly finished cattle and sheep, and a continued favorable feed-hog price relationship, point toward continued increased production of hogs as a fact of major consideration in the production and processing of meat animals.

HOG PROCESSING PROBLEMS

Prior to the current year, the estimated number of hogs dressed annually under Federal inspection in the United States varied from a peak of 53,334,000 in 1923 to a low of 26,057,000 in 1935. The hog marketing year from October 1941 through September 1942 brought nearly a record marketing of hogs, estimated at close to 53,000,000. This is only a forecast of heavy marketing to follow. The five summer months of 1942 reached a new high, and the great bulk of a record spring pig crop will be marketed from October to March.

Processing, therefore, becomes a record task. The processing problem for hogs is more complicated than for other classes of livestock. Because of the slower rate of increase and the longer time required to bring cattle and sheep to finished market condition, processors can be better prepared to handle these, and it is impossible for numbers marketed to fluctuate so sharply.

Various estimates based on the current rate of hog production and farmers' intentions to produce indicate that a new high of 65,000,000 hogs may be slaughtered under Federal inspection within a twelve-month period. Can it be done without artificial controls? Leaders among processors think it can. Some professional planners think it cannot. It is probable that the slaughtering can be accomplished provided skilled laborers can be retained, but freezer, curing, rendering, or storage space may be taxed beyond capacity during the peak of operations in December and January. If this does not occur, transportation may become the limiting factor.

THE QUESTION OF CONTROLS

With increased output imminent, the problem arises as to what steps should be taken to safeguard the orderly functioning of the industry. Opinion varies from the proposal to issue marketing permits through some local agency, such as the county war boards, to that of waiting until the emergency develops and then instituting controls operated through the markets.

The former would require a new system operated by inexperienced workers on a highly decentralized basis, while the latter has been used successfully with a minimum of effort and can be quickly adjusted to processing capacity.

Fortunately, live hogs are not a highly perishable product. They may be marketed at 200 to 250 pounds without material change in feed requirements per unit of gain, in increased total cost per unit of gain, or in the quality of product. True, most of the gain above 225 pounds weight is a gain in fat or lard. Insofar as more fat is vitally needed and can be recovered economically by the processor, the higher weights are desirable.

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[5] *The Feed Situation,* August 1942.

Feeding to heavier weights, therefore, would be an effective means of leveling off the peak of hog marketings into the succeeding thirty-to-sixty-day period.

If the processors are able within a narrow margin to handle the prospective hog production of this marketing year at the normal rate of marketing, if freezer, curing, rendering, and cold storage space are nearly adequate, and if transportation operates at a high level of efficiency, then it would seem to be sound judgment to rely on temporary controls over hog shipments to regulate hog marketing if and when necessary in line with processing and transportation facilities.

The ability of the packing industry to process the expected 7.5 million hogs per month at the peak of the current slaughter year is predicated upon the packers' ability to obtain satisfactory priorities on needed repairs and some expansion in equipment to balance up processing units. Likewise, the proper functioning of transportation is dependent upon the Agricultural Marketing Administration's acceptance of delivery on lend-lease purchases as the supplies become available, thus preventing congestion either in the storage space of packing plants or in cars.

HOG PRODUCTION PROBLEMS OF THE FUTURE

With one of the largest corn crops on record harvested, augmented by a large feed crop carry-over and some saving in feed grains through marketing cattle in a less highly finished condition, farmers are planning a further increase in hog production. Looking to the year following October 1943, the problem may be more critical. Unless processing and transportation facilities are expanded, the possibility of solution at the source of production on Corn Belt farms needs to be fully explored.

Any statements pertaining to 1943 or the more distant future, however, must be based upon normal climatic conditions. Droughty conditions in the range country would interfere with the expected increased slaughter of fleshy grass-finished cattle. Unfavorable spring weather, together with the already inadequate labor supply in the range country, might lead to abnormal losses of young animals. Plans or statements, therefore, can best be based on assumed average production conditions.

DISTRIBUTION OF HOG MARKETING

It is easy to suggest that farmers readjust their production pattern to distribute the marketing of hogs more uniformly throughout the year. Purely from the farmer's point of view, why not feed hogs to heavier weights to avoid the January peak in marketing? Farmers say that if more hogs are wanted, they prefer to increase numbers and sell at near the normal weights. Back of this preference is the experience that medium-weight hogs normally command premium prices, especially such hogs marketed in late summer or early fall. Late pigs reaching normal market weight before the most severe winter weather frequently make poor gains in periods of extremely cold weather. While such weather seldom continues for long periods in the areas of heavy hog production, that situation is enough of a possibility to encourage the thoughtful hog producer to market his hogs before late January and February. In extreme need, a price support for heavy hogs marketed following the month of January would be the most effective way of encouraging the voluntary marketing of heavier hogs.

An alternative might be a campaign for the production of more winter or early spring pigs which should reach market in the fall months. Experience indicates that such a program would not meet with much success. Few farms are well equipped to produce early pigs. While some producers succeed fairly well, the average size of early litters of pigs is small, and far too many producers fail to maintain the health and thrift of pigs carried for a long time before spring pasture and continual mild weather arrive.

A third approach is to produce more June and summer pigs. From the farmer's point of view, this should be the most fruitful method of spreading out the marketing of the animals. While this causes too many pigs to arrive in a busy season of the year, with an acute labor shortage in prospect, a minimum of labor or equipment is needed when hogs are on pasture. Producers of early spring pigs can produce a June crop by utilizing some of the same equipment used for early pigs. Emphasis should therefore be placed on increased farrowings in June and the summer months as the best means of distributing the processing more uniformly over the year. Any planning, therefore, needs to begin with a careful analysis of practical production considerations rather than the ideal from the standpoint of processing. The two must be harmonized to obtain the most satisfactory results.

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Book Department

INTERNATIONAL LABOUR OFFICE. *Food Control in Great Britain.* Pp. vi, 272. Montreal, 1942. $1.25. (Distributed by: ILO, 734 Jackson Place, Washington, D. C.)

This volume of International Labour Office Studies and Reports is a most timely and useful contribution to the solution of a host of war problems concerning the administrative regulation of supplies and distribution and the control of food prices facing the governments of the United Nations. The author, Edith Tilton Denhardt, assisted by Dr. E. F. Penrose, presents to the reader a comprehensive survey of the structure of British prewar food supply and an extremely well-organized, authoritative review of agricultural policy, control of supplies, the system of rationing, and the food price control policy, and she adds an especially valuable chapter of critically evaluating conclusions. Fully seventy pages of appendix tables add all the pertinent statistical data on consumption and prices, as well as a chronology of food control measures.

While Chapters I–V contain important and authoritative factual information, Chapter VI with the author's conclusions ought to be compulsory reading for all who are occupied with shaping similar policies in the United States and other countries. A few sentences picked at random by the reviewer may indicate that the book does justice to the intriguing aspects of temporary regimentation in a democracy and the political and social imponderables involved.

". . . The mistakes and successes discussed in the following pages illustrate many principles important for the successful administration of food control. Most striking, perhaps, is the number of things generally considered administratively impracticable which, when attempted, have proved extraordinarily successful . . ." (p. 171).

". . . information must be collected on what people eat, what they should eat, and what changes can be made with the minimum of public discontent. It is nutritionally absurd, to be sure, but in Great Britain supplies of tea and jam must be safeguarded as much as those of cheese. Public taste cannot be ignored" (p. 171).

In a footnote the report seems to comment unintentionally but most pointedly on the controversial debate in this country about the supposed necessity of a separate War Food Administration. It states that the separation of the Ministry of Agriculture from the Ministry of Food has complicated British food control, and that according to universal agreement a single body concerned with all aspects of food policy would be infinitely preferable if it were politically possible.

While the Office of Price Administration is straining all its resources to shape a food rationing system that will stand the test of years of hard times, it is most stirring admonition to read the report's conclusion from years of British experience: ". . . control of only the so-called basic foods is not enough. . . . This procedure was largely followed in Great Britain. . . . It had three undesirable results" (p. 173). These results are explained and plausible reasons given.

Much that is said about the price control policies refers directly to our great dilemma between fighting inflation and increasing agricultural production. It is stated that the importance of the influence of relative prices on agricultural output has been demonstrated in Great Britain and that it has therefore been made a basic part of agricultural policy. Subsidies have been granted to cover increased production costs without raising consumer prices. Since in Great Britain relative prices must keep production profitable, and since the price of each product is fixed by trial and error to a large extent and by bargaining with the farmers, the threat of a general rise in the agricultural price level is as real there as in the United States. The report does not conceal the importance of violations of price and food control and of measures to fight them. It mentions that according to British experience, a fine imposed for black market trading that does not bear a close relation to the size of the operation has little deterrent effect.

The book is written with a detachment,

and well-balanced, temperate judgment that would be admirable even in an economic historian's essay on policies of the past. This quality makes it so much the more valuable a contribution to the preliminary work on America's food control, still under construction.

KARL BRANDT
Stanford University, California

LINEBARGER, PAUL M. A. *The China of Chiang K'ai-shek: A Political Study.* Pp. xi, 449. Boston: World Peace Foundation, 1941. Paperbound: $1.00; Clothbound: $2.50.

Dr. Linebarger's point of view on Chinese politics can be correctly predicted from his personal relationships. His father was adviser to Sun Yat-sen, and Dr. Linebarger himself as a child knew the man whom he now compares not to "Alexander, Genghis Khan, Napoleon, or Hitler, but to Confucius, Gautama Buddha or Mohammed." As can be expected, he is strongly orthodox, supporting generally the virtues, the rights, and the policies of the Kuomintang and the Nationalist Government which it dominates. His enthusiasm for them leads him to believe that America might well long since have looked to China as "the decisive, fresh political experiment of our times" (p. 45).

There are, however, a number of contradictions in this book. For instance, the somewhat immoderate statements on the economic prosperity of West China in 1940 (pp. 89, 92) are to be contrasted to the analysis of the Chinese land problem, "where low political morale exposes the farmers to the unrestrained power of the gentry, acting in the triple capacity of officials, landlords, and moneylenders" (p. 106). Here, in Dr. Linebarger's opinion, "today, if one judges by past experience, rebellion or reform seems long overdue" (p. 106). In this connection his judgment on the border-guerrilla governments is interesting. In the Border Region he states, "a very high degree of direct popular government has been achieved" (p. 119). The driving power behind the regime there is "social revolution as a means to national resistance. made easy by the flight of many former local bureaucrats, and by the treason of some ultraconservatives, who affiliated themselves with the Provisional Government established by the Japanese in Peiping" (p. 117).

Are these "ultraconservatives" and "local bureaucrats" those persons previously named as "acting in the triple capacity of officials, landlords, and moneylenders"? If so, the question raised (p. 117) as to what will happen if the Japanese leave "and the Border Region has to settle the issue of *status quo* v. *status quo ante bellum* with the central government" is indeed important. The Generalissimo told Dr. Linebarger that he did not mind the encroachments of the guerrillas, because he and they were both "working for democracy" (p. 118). In this case, where is it that agrarian "rebellion or reform seems long overdue," particularly when according to the writer "the National Government does not abandon its chief political-economic weapon by disregarding land and labor reform" (p. 111)?

Perhaps clarity in the picture of present-day Chinese politics is too much to demand. Dr. Linebarger himself points out the problems for those who would establish government on a basis of unity in China. He attributes the difficulties of the Japanese Army in advancing beyond military rule in governing occupied territory, primarily to "the difficulty of governing Chinese at all" (p. 186). The National Government itself, he states, "possesses unprecedented amounts of power by Chinese standards. By Western standards it is incredibly obliging, casual, and unsystematic" (p. 214). Also: "Despite attempts to bring society under the control of government, in order to make it possible to bring government under the control of society (constitutionalism), the decisive forces of modern Chinese life are outside the reach of propaganda or control" (p. 213).

All this indicates the difficulty of analyzing present-day Chinese government in Western terms, a difficulty of which Dr. Linebarger is fully aware. Understanding of modern Chinese politics depends on a full knowledge of Chinese culture and of the historical precedents that help to form the Chinese mind. A great deal more knowledge of this kind must be disseminated in this country before public attitudes on China can profit from the influence of such works as the one under review.

DAVID NELSON ROWE
Princeton University

CALLCOTT, WILFRID HARDY. *The Caribbean Policy of the United States, 1890–1920.* Pp. xv, 524. Baltimore: The Johns Hopkins Press, 1942. $3.50.

There is indeed especially in these times a place for a new book on the Caribbean policy of the United States, or even on the whole course of our Latin American policy, if the writer would give us a large-minded historical interpretation of the broad principles that have dominated that policy during the last century and a half. We get no such understanding from reading this book. After putting it down the reader has none too clear an idea of what the Caribbean policy of the United States has been or is now, or was during the decade 1910–20.

The author has diligently read all the books (except a few of the most important ones, like Temperley's *Canning,* Webster's *Castlereagh,* Webster's documents on *Britain and the Independence of Latin America,* and Vagts's *Deutschland und die Vereinigten Staaten in der Weltpolitik*), and then has gone and written another book himself. During the task he has even consulted the printed state papers and a dozen important manuscript collections, in the Library of Congress, of statesmen and other participants in our Caribbean policy from 1910 to 1920. In his own book he manages to quote or cite without masterly discrimination each one of the other books and articles that he has read or listed, even though some of them have only the most casual reference to the text at hand. First impression from a glance at the bibliography and the multitudinous footnotes is one of formidable scholarship; but actually, the book is imperfect. Despite new details from such collections, it offers little essentially new. Other scholars have already covered the ground, and Professor Callcott puts no new interpretation or imagination into his work which improves upon their labors. The sentence structure is often confusing. The punctuation is irregular and inconsistent, now stiff and calcified, now loose and inarticulate. The English is not of the best. The thumbnail critical comments on bibliography are too often hit-or-miss, or pure guesswork; witness the comments on Rojas' *La culpa de Henry Lane Wilson,* Genaro Estrada's *Doctrina de Monroe,* and W. Stull Holt's *Treaties Defeated by the Senate.* Other faults of the book are its unskillful arrangement of material, its inability to subordinate detail, and its general lack of clarity. One detail, however, is subordinated out of sight. After describing the constitution imposed on Haiti in 1918 as "drafted extra-constitutionally, if not unconstitutionally; and adopted by force, if not fraud" the author is careful not to indicate who the very well-known person was who drafted the constitution and who now plays a leading part in American life and in the direction of the present Good Neighbor Policy of the United States!

SAMUEL FLAGG BEMIS
Yale University

LOEWENSTEIN, KARL. *Brazil Under Vargas.* Pp. xix, 381. New York: The Macmillan Company, 1942. $2.75.

This book is written on the assumption that the government of President Vargas is a "novel system of government" and that a European-trained scholar can better understand the Vargas regime than a United States scholar or even a Latin American one. In treating his subject, Dr. Loewenstein has tried "to combine the inductive analysis of the constitutional lawyer with the realistic interpretation of the sociologist"; but in doing this, he has neglected the role of the historian of past events for the role of judge of the contemporary scene.

After a brief backward look into Brazilian political affairs (fifteen pages), the author introduces the "National Revolution" of 1930 when Vargas, the governor of his native state of Rio Grande do Sul, took over the presidency in October. Until 1934 Vargas maintained a "provisional government" which substituted a temporary political framework of dictatorship for the constitution of 1891 which had created the First Republic. The new executive began his presidency "with much energy, good will, circumspection, and moderation," and he laid the groundwork for the later economic and social reconstruction of Brazil. But unrest led to revolt in the state of São Paulo in 1932, and Vargas was faced with civil war, which, once put down, was forgiven and forgotten by the executive.

The constitution of 1934, finally created by a constitutional assembly, "coincided so much with Vargas's concepts of autocratic presidentialism that in many respects it appears tailored to his measure." This government was a strongly centralized federal republic, and it served as a "brief interlude only between two phases of authoritarian government in Brazil." Its provisions were permeated by a "pronounced collectivism . . . with the emphasis on the people as a whole and on the forgotten man." Vargas assumed the presidency under this political instrument, and there ensued in Brazil until 1937 what the author calls "the twilight of constitutional government."

The President soon came to dislike this constitution "which narrowed his heretofore absolute powers; but he stayed his hand and showed at first considerable tact and reticence in remaining faithfully within the constitutional limits of his functions." But this constitution barred a second term for the President, and Vargas was not the man to step out of so high an office without a struggle. A military revolt (called "Communistic") gave the President the opportunity to assume extraordinary but "legal" powers, eventually to be used against Integralists (Brazilian fascists) and other political enemies and to prevent the election of a new President for the country Thus Vargas perpetuated his authority and was able to establish his *Estado Novo* by the coup d'état of November 10, 1937 in which he suspended the constitutional guarantees and named himself President under a new constitution. Vargas had become the "indispensable man" who only could save Brazil from its enemies and who alone could establish a "New Deal" for his people.

From this point on, the author deals with many technical characteristics of the constitution of 1937, which make easier and more intelligible reading for the political scientist than for the layman, and with the part Vargas has played in every phase of political, social, economic, and intellectual development of the country during the past five years. Dr. Loewenstein describes this constitution as "a ghost Constitution. It exists on paper, but its essential provisions are devoid of living reality. It was born and yet it has never lived. It is a document of no less than one hundred and eighty-seven elaborate articles, drafted in lofty phraseology, and with that technical craftsmanship for which its author, Minister Francisco Campos, is duly renowned." Under this document prepared by this "one-man brain trust," President Vargas rules by decree laws.

The last chapter is an attempt to paint a "portrait of a leader" and to look into the future of Brazilian political development. "Vargas is neither a vegetarian mystic with voices nor a cynical braggadocio with vices; he is a bourgeois person with bourgeois tastes and some very human failings which are no secret to many people."

This work, while not strictly popular in nature, constitutes a shrewd analysis of contemporary Brazilian political psychosis. Perhaps the author would have produced a better work if he had been more intimately conversant with the practices of dictatorship during more than a hundred years in the other Latin American countries, for he apparently fails to realize that Brazil at long last is experiencing the growing pains of *caudillismo.* Because of this seeming oversight, he has made in the case of Brazil a political mountain out of a constitutional molehill. But the work is a case study which deserves the thoughtful consideration of all students of the Latin American political scene.

A. CURTIS WILGUS

George Washington University

WHITE, JOHN W. *Argentina: The Life Story of a Nation.* Pp. xi, 366. New York: The Viking Press, 1942. $3.75.

This is one of the most valuable among the many Latin American books which have been published within the past three years. It avoids the mistakes of the majority of them, which look at Latin America from the viewpoint of either an almost hundred-per-cent enthusiastic United States citizen or an almost hundred-per-cent enraged Latin American. White is 50 per cent of each, after having stayed in Argentina for twenty-five years as correspondent successively of five leading United States daily papers—the last ten years for the *New York Times*. We should, therefore, have confidence in the correctness of his opinions. His admirable ability to distribute light and shadow equally is evidenced by his explanation of Argentina's attitude toward the United States and his description of our behavior regarding Argentina.

I do not know of another book on "the most American-like South American country" in which there is to be found such an amazing material on historic, political, and economic matters written in such a dramatic style. Many of White's paragraphs are more picturesque than all the pictures illustrating the various parts of Argentina: pampas and Patagonia, the streets of Buenos Aires, "the vanishing race of Indian cowboys," the gauchos, and so forth.

A few of the means to promote the collaboration of the two principal republics of the Western world—without which no real independence and economic strength can survive in our hemisphere—and offer new strength to the exhausted nations of the other parts of the world are: (1) help Argentina to remain solvent during war and peace by exporting sufficiently, not by problematic political loans but by suspending the remaining tariff on most of its products; (2) encourage the formation of regional groups among the South American nations to make it possible in a not too far distant future to establish a customs union among them. This would also help them to raise their low standard of living.

What better way exists for eliminating the troublesome competition now existing between the agricultural production of the two nations than by developing the lacking trade relations with Argentina's direct neighbors so that they can buy the goods which the United States cannot take?

It might be difficult to write a better book for reaching the highly desirable goal "to hold the allegiance of Latin America and so unite the Western world as a political and military balance against war-crazed Europe and Asia." The most important prerequisite in winning the friendship of Argentines "who were inclined to be sarcastic about the good-neighbor policy" would be to reconcile ourselves to some commercial sacrifices for the sake of our political and military safety, by putting the larger general interests of the Nation above the predominant selfish private interest of some groups.

ALFRED MANES

Indiana University

DONOSO, RICARDO. *Desarrollo político y social de Chile desde la Constitución de 1833.* Pp. 210. Santiago de Chile: Imprenta Universitaria, 1942.

For readers in the United States this excellent summary and interpretation of the history of Chile from 1833 to 1938 has appeared at an opportune moment. Since Pearl Harbor the Chilean Government has followed a policy that has puzzled many persons in this country, and Dr. Donoso's lucid account of the increasing social tensions and political fragmentation that have characterized the internal development of Chile since the turn of the century goes far towards explaining the present international position. One could only wish that he had had more to say about the considerable German and communist elements in his country.

Of the many important points brought out by Dr. Donoso's account of the domestic development of Chile, there are two that are particularly interesting to readers in this country at the present time. The first is his description of Chile's experiment with the parliamentary system of government, which some of our own leading authorities are recommending to us today as inherently superior to our own presidential system, but which failed dismally in Chile The second is his emphasis on the fact that Chile had developed a strong middle class by the early years of the present century—a fact which will come as a surprise to those in this country who believe that there is no strong middle class anywhere in Latin America even today.

Although the text of this book has already been published as a part of the comprehensive *Historia de América* edited by Ricardo Levene, the present volume contains an important appendix never before published. This appendix (28 pages of small print) is Dr. Donoso's vigorous reply to ex-President Alessandri's pamphlet bitterly attacking many statements in the text as originally published. In the reviewer's opinion, Dr. Donoso has decidedly the better of this exchange, which is without parallel in the history of Chile; and indeed, the moderation of his political and social judgments, together with his well-established reputation, gives exceptional value to the whole book, text as well as appendix.

ARTHUR P. WHITAKER
University of Pennsylvania

WRIGHT, QUINCY. *A Study of War*. Vol. I, pp. xxiii, 678; Vol. II, pp. xvii, 679–1552. Chicago: University of Chicago Press, 1942. $15.00.

This two-volume work summarizes fifteen years of collective research carried on at the University of Chicago under the direction of Quincy Wright, a distinguished specialist in international law. In Volume I, the destructive intensity of modern warfare is shown, by facts and figures, to be forcing an increasing need in our civilization, in our time, of preventing war. The drives, the theories, the technologies, and the functions of hostilities are studied. In Volume II, Wright analyzes the causes of war and its control. The way in which various economic and political factors combine to upset the equilibrium of peace are examined. Suggestions are made for estimating the probability of war under given circumstances, and the practical problem of war prevention recognized in all its aspects.

The study answers literally hundreds of questions on every phase of the impact that war has made on man and mankind from the earliest times to the warring present. Having drawn from widely scattered printed and manuscript sources, Wright has here presented a thorough and complete study of available materials in this field and a skillful interpretation thereof. Most of his sources are familiar, but many will be new even to the specialists in the problems of war. In short, Wright has done a magnificent job, and the greatness of his product lies not only in the systematization of the material but also in the author's ability to condense his information into a swift and readable narrative in a form which certifies to his insight into what the American mentality finds most puzzling about the phenomenon of war.

The amazing thing about the book is its completeness and remarkably sound scholarship. Not that the book is without its weak points. It could stand more references to the less-known and untranslated studies of war in German and other languages. Here and there Wright slips into wild generalizations, such as: "There is ground for saying that in the contemporary world there is only one civilization—the civilization of humanism, liberalism, scientific method, and relativism . . ." (Vol. I, p. 111). One appreciates the ethnocentric value of this assumption, but must wonder how far it will be accepted by the totalitarian and racial spokesmen. Or we read that "humanism, liberalism, pragmatism, and relativism are becoming the faith of the contemporary world-civilization" (Vol. I, p. 192). Would it not be safer to forget the terms "humanism" and "liberalism" in this hypothesis? Furthermore, the reviewer suffers, as a sociologist, to learn that "primitive peoples . . . differ from civilized in their resistance to progress" (Vol. I, p. 91).

But the weaknesses of Wright's great contribution are, by and large, very minor; for he has approached his subject, fortunately, not only as an international law specialist but also from the various viewpoints of the social sciences and the disciplines related thereto. Thus, here we find pages after pages devoted to subjects which appear, at the first glance, not directly related to the topic of the book—"The Definition of Certain Sociological Terms," "The Relation of Certain Philosophic and Linguistic Terms to Group Life," "General Welfare and Related Concepts," and so forth. But they are all integral parts of Wright's theme, with the result that *A Study of War* is at the same time a dependable minor encyclopedia of social sciences, a book for reading and reflection, and a solid foundation work of reference on all imaginable aspects of the greatest curse of our modern civilization—the civilization of which the distinguished author seems to be so proud.

JOSEPH S. ROUCEK
Hofstra College

SAYERS, MICHAEL, and ALBERT E. KAHN. *Sabotage! The Secret War Against America.* Pp. 266. New York: Harper and Brothers, 1942. $2 50.

The current popularity of *Sabotage* indicates that America's public opinion is beginning to be interested in the brutality and the "awful truth" of international politics. Up to Pearl Harbor, roughly speaking, all the publications describing the techniques of Axis saboteurs had been disposed of by mere shrugs of shoulders. After all, we had proved to ourselves—and thus also to the rest of the world, we thought—that such techniques are "immoral" and hence would not be used by "civilized" states. When reports of such activities began to crop up, they appeared so fantastic that, again, we did not bother to worry about such stories, which resembled too often the scenarios of Hollywood. We still had to learn that Adolf Hitler once remarked of his hopes and methods: "The greatest improbability is the most certain."

The Nazis, relying as always upon the moderate rationality of the world at large, have made a use of "improbabilities" in the art of sabotage that amounts to cold genius. Thus many interesting facts in *Sabotage* had already been printed in such works as: George Britt, *The Fifth Column is Here* (1940); John L. Spivak, *Secret Armies* (1939); L. Farago, Ed., *The Axis Grand Strategy* (1942); R. W. Rowan, *Secret Agents Against America* (1939); Curt Riess, *Total Espionage* (1941); Joseph Gollomb, *Armies of Spies* (1939); and others. But these studies (with the possible exception of Riess's) made no splurge at all. Sayers and Kahn's work has the distinction of being not only a good seller but also of being quoted as a work to be "believed."

Written obviously in a hurry, the style is a jerky one. But it is the contents that counts. Here the authors expose the menace and the extent of physical sabotage as well as the Axis psychological sabotage. Containing approximately fifty pages of secret papers, photographs, spy letters, and other documents, *Sabotage* traces Nazi and Japanese conspiracies aimed at wrecking or obstructing the American war effort. It shows how disruptive propaganda appeals to fear, cupidity, and malice, and how it makes use of paid enemy agents, like George Sylvester Viereck and Laura Ingalls; how it fans the flames of bigotry, race prejudice, and lust for power in our own home-grown fascist movements, like the Silver Shirts, the Ku Klux Klan, and the Christian Front; how it aids and abets strikes, race riots, and opposition movements, such as the America First Committee, which included many distinguished and sincerely patriotic men whose dislike for the present administration led them into activities that suited our enemies' plans perfectly.

For some unexplained reason, the authors have steered away from the Italian psychological saboteurs in this country. Otherwise, the book is an admirable introduction to the operation of fifth columns in America, as well as to the naiveté, the gullability, and the charming insensibility with which, on the whole, the American public opinion has viewed this problem until very recently.

JOSEPH S. ROUCEK

Hofstra College

MILLER, EUGENE H. *Strategy at Singapore.* Pp. xii, 145. New York: The Macmillan Co., 1942. $2.50.

The loss of the British Singapore naval base and the island of Singapore will be written about and studied by military historians, as well as military-naval critics, in connection with the strategy, the results, and the "might-have-beens" of World War II, because so many high hopes were pinned on the strength and the potentialities of the Singapore base. It was indeed a major disaster when this stronghold fell to the Japanese on February 15, 1942, as a result of a well-timed land and air attack. The vital key to the control of the far Pacific and the Indian Ocean went to an aggressive enemy—long prepared for an operation of this nature.

It is with scholarly research and great care that Dr. Eugene H. Miller has set forth the genesis of the Singapore naval base and surrounding defenses. After mentioning the implications of the Washington Conferences and the Treaty Limiting Naval Armaments, the author states that Great Britain "found herself in a perplexing and ominous situation. She no longer had a formal alliance with Japan and she had no base in the Far East capable of maintaining a modern naval base. . . . The Board of Admiralty decided that the solution lay in the construction of a first class naval base in the Orient."

The importance of Singapore as the location for an ideal naval base is well set forth in an important chapter called "Sea Routes and Security." Then follow the political considerations of a controversial nature that ensued when the plan was broached to Parliament. The whole matter of British Empire defense is set forth, in general, in this volume as discussed by the newspapers of the day as well as the political debates and private opinion of experts. The technical considerations are also presented, with special emphasis on the proposed nature of the defenses, such as, Should the base be primarily naval or military? At the time, it appears that air power and its great possibilities entered little into these discussions.

Dr. Miller has done considerable research to gather all the facts and opinions of that period when the mind of the British people seemed much confused by the "experts" of the day, in their comment on the advisability of building such an expensive base in the mud and swamps of Singapore Island.

In the chapter called "Setback at Singapore," the author devotes little space to the military, naval, and air operations that led to the fall of this vital base at the crossroads of the far Pacific. Not much has been written to date as to the details of these military operations that lost for the United Nations their one great Far Eastern stronghold. The events that led to the fall of Singapore are set forth in a general manner, while the overweening ambitions of Japan are thrown in strong light by a recital of her acts of aggression previous to Pearl Harbor.

The author has presented the subject matter most objectively in a well-indexed and -documented small book. It is highly recommended for all students of Far Eastern affairs as well as those who are studying the strategy of the Pacific. The book is of definite historical value.

LELAND P. LOVETTE, U.S.N.

Washington, D. C.

FRIED, HANS ERNEST. *The Guilt of the German Army.* Pp. xi, 426. New York: The Macmillan Co., 1942. $3.50.

Kaisers may go and Hitlers may come, but the German military caste goes on—forever? No, not if we follow the advice of Hans Ernest Fried in *The Guilt of the German Army.* Victory over Germany must be coupled this time, he says, with the complete removal of the German military class from military activities and economic influence.

Mr. Fried presents damaging evidence against the professional German Army clique that not only thwarted the plans for its demobilization in 1918–19, but stayed right on in the service, drawing pay from the democratic state while plotting its overthrow. Their coalition with the Nazis he shows as thorough and complete. He shatters conclusively the appeasing myth that if you can't deal with Hitler you might be able to do business with the German Army. Their marriage of convenience, he points out, is a natural attraction of forces subversive to civilization toward each other, and they will cling together until death and destruction overcome them both. As an antidote to the evil influences that made possible the Nazi military cult, he suggests the fostering of an anti-Nazi popular army in Germany after the next armistice.

There is an old adage that people usually get the kind of government they want, and the Germans always have wanted some form of militarism. Before democratic forces can rise to govern Germany, the people themselves must want democracy, must want it more than revenge and more than a place in the sun. There is nothing so far in modern German history that indicates a widespread faith in freedom, tolerance, and the other fundamentals of free government. Only patience and firmness on the part of the United Nations victorious offer the hope for a German metamorphosis. Whether Germany should have an army of its own at all would seem to be more important than the question of the makeup of her postwar military force. It is difficult to share the author's feeling that the militarism of Germany is destructible. It will be controllable by superior fighting strength of the rest of the world.

The book presents many interesting details about the mind, heart, and discipline of this German military caste. Those familiar with our own Army can see our own officers and enlisted men in marked and pleasant contrast. There is no officer clique in America. West Point is recruited from all walks of life. Commissions from the colleges or from the ranks recognize no class distinctions. But most important of all, the idea that the head of the Army is in fact the civilian President and the civilian Secretary of War and his assistants is inculcated in the American military mind. There is no indication that a man on horseback, even if he were ever to emerge from our own forces, could count on soldiers to rally to his support. We do not glorify war. We accept it, and our soldiers are determined to win it and go home. Although they are the best-dressed men in the world today, our men in uniform would clamor for their "civies" the minute the Nazis and the Japs were licked. For the most part, our soldiers are civilians at heart; and in such an atmosphere militarism in the German sense cannot thrive.

The Guilt of the German Army shows up the Nazi enemy in his true light. He cannot be appeased. He cannot be compromised. He knows the power of force. Only overwhelming defeat will stop him. The respect for military caste among Germans may not be obliterated entirely in defeat, but for another generation, at least, it will not be a world menace. The complete destruction of militarism will rest with the peacemakers.

COL. A. ROBERT GINSBURGH
United States Army

WEIGERT, HANS W. *Generals and Geographers*. Pp. x, 273. New York: Oxford University Press, 1942. $3.00.

Geopolitics has lately become fashionable. Many believed it to be a science—some kind of German super-science which would assure German victory in this war and German world domination thereafter. In his excellent book Dr. Weigert reveals geopolitics as what it really is, a part of the German Weltanschauung, similar in that to German racialism, which also claims scientific foundation. In reality, both are instruments of German power politics and lust for domination which gain a certain austere cloak of objectivity by entirely disregarding the human elements, as understood in classical and modern civilization—the dignity of the human being and his right to happiness. As Dr. Weigert puts it very well, the dogmas of geopolitics and of racialism have but one purpose, to show "with teutonic pedantry and a passion for legality that the German march of conquest is scientifically legalized as a manifestation of the laws of nature."

Dr. Weigert explains in a lucid way and in a very readable style the ideas of Karl Haushofer, who combines in his person the traditions of the military profession with the passion of the teacher. His relations to Ratzel, Spengler, and Sir Halford Mackinder, and the whole problem of German politics and German mentality are discussed with clarity and great fairness. It is rightly pointed out that Spengler's discussion of civilization applies in reality only to the Nordic-German civilization, and that what he calls the West and Western civilization has nothing to do with the Anglo-Saxon, the French, or even the Scandinavian form of civilization, which Spengler partly did not know and partly misunderstood. This should be emphasized at a time when some American writers have discovered Spengler and have begun to apply his categories sweepingly and uncritically not to Germany, but to the world at large. They then easily mistake as a wave of the future, as a kind of worldwide revelation or revolution, what in reality is only a German wave.

Haushofer dreamt of a great transcontinental bloc of Germany, Russia, and Japan, in which Germany would be the dominant partner—a bloc which would replace the "aging" British Empire and, as a result of its immense and impregnable power, control the world. The British Empire, which had assured the peace and prosperity of the world for one century and had been based on the principle of the growth of liberty, had ruled by sea power; the new empires, to whom the ideas of peace and liberty were rather alien, would rule by land power. Large and growing spaces would be the foundation of the dawning revolutionary age which, as Dr. Weigert says, required a dynamic and restless view of geography. The new empires of Germany, Russia, and Japan would integrate China and India into their power system. This mammoth continental empire of almost one and a half billion people under the guidance of German genius would establish an order lasting for centuries on unassailable spatial foundations. Certainly German geopolitics opens vistas of great interest for mankind's future. Its problems are discussed in the book with intelligence and with an appreciation of the historical and humane factors involved.

The author is right in his emphasis on the need of a global viewpoint on the part of the American people. But it is regrettable that he himself succumbs in the final pages to the lure of wide spaces and sees the future of the world based upon the land masses of Eurasia (Russia and China) and North America. "Europe will no longer be the place from which the world conquerors and the world reformers will start." Let us hope that world conquerors will start from nowhere, certainly not from North America or Eurasia; but there is no reason whatsoever why world reformers should not start from very small countries and very limited spaces. The importance of a country is not primarily determined by vastness, but by its human element. The author inclines to overestimate land power. So far, the decisive front in this war has been the Atlantic Ocean, which the British fleet, helped by ours, held open. The central strategic position of England and her hold on the Mediterranean, through Gibraltar, Malta, and Alexandria, may easily prove the factor saving world liberty against the calculations of all would-be heirs to an "aging" British Empire. Thinking in global terms does not mean replacing Germany by America in a new continental power combine which would decide the fate of mankind. The political wisdom and daring of England, the mother country of liberty, and the spiritual energies of Europe will retain their influence in the future.

HANS KOHN

Smith College

SOROKIN, PITIRIM A. *Man and Society in Calamity.* Pp. 352. New York: E. P. Dutton & Co., Inc., 1942. $3.00.

This work is the application of theories worked out in the author's *Social and Cultural Dynamics* to the specific problem of calamities—famine, pestilence, revolution, and war. It has all the virtues (and the defects) of that work. Virtues: a clear-cut, logical analysis of the problem and of the factual materials bearing on the problem the author set himself; an acquaintance with the historical data bearing on calamities and their effects upon a wide diversity of peoples, ancient and modern, involving citations from authors writing in many languages; and a skillful use of the materials in support of his theses. Defects: an analysis and generalizations based *in part* upon common-sense observation rather than upon data cited from historical or contemporary sources critically examined and verified; a tendency to generalize without cautions as to the limitations inhering in common-sense observations which have not been tested as to reliability and weight.

On the whole, the book is a most stimulating work. Its very boldness, its sweeping generalizations, even its unverified hypotheses, raise questions and suggest points of view which challenge sociologists of the more methodical and "scientific" persuasion to test by more precise methods the author's theories. Sorokin is both an inductive scientist and a prophet. When his material does not permit the application of the critical tests which modern scientific sociology demands, he does not allow that fact to deter him from making an analysis and formulating generalizations, or from making prophecies of what is ahead for societies visited by calamities. While his "Law of diversification and polarization of the effects of calamity" may seem to be a screen to hide the methodological defects of the author, yet this generalization probably pictures the diverse effects of calamities on individuals and groups in most societies. Sorokin estimates the relative weight of each of the types of calamity in constructive and demoralizing effects on individuals and groups. He has provided no exact method by which these diverse effects may be measured.

Perhaps the greatest theoretical contribution of the book is the emphasis on the importance of the values cherished by different societies, and the effect of these values in softening or aggravating the social results of the different calamities discussed. The reviewer finds himself in agreement with the author in emphasizing the values centering around the concept of the Kingdom of God in preventing the adverse effects of calamities on individuals and groups in a society. The reviewer, however, recognizes that this is a faith, not a scientific deduction. As a faith, however, it contains the possibility of producing efforts to realize the integration of values by a society for its preservation in the face of any calamity.

J. L. GILLIN

University of Wisconsin

STEINER, GEORGE A. (Ed.). *Economic Problems of War.* Pp. xi, 665. New York: John Wiley & Sons, Inc., 1942. $3.50.

This book cannot be adequately reviewed by a single reviewer any more than it could have been produced by a single writer. It comprises a series of studies, each of a major economic problem arising out of the war, each by a specialist. In fairness to those who joined in this enterprise, only a person himself at home in the several fields could attempt an appraisal. This reviewer, making no pretense at knowledge sufficiently embracing to perform the task single-handedly, can deal with the work only as a nonexpert member of the reading public.

The authors have undertaken to describe the economics of modern warfare. After two preliminary chapters, one a generalized statement of the total problem and the other a survey of American resources, there follows a description of the economic war organizations of three of the major belligerents—England, Germany, and Japan. It is to be regretted that nothing is said about Russia. While this is probably due to the paucity of data, even an incomplete picture would have been better than none. It would be helpful to have some understanding of the economy which lies behind the Russian defense—the planning, the organization, and the execution which went into that seeming miracle.

The next two parts of the book are devoted to a close examination of the economic difficulties which confront our country in waging global war. A separate chapter is devoted to each problem—money, finance, credit, prices, raw materials, production, labor, agriculture, transportation, housing, and others. Each is analyzed against its historical background, reference is made to what was done during the first World War, and a description is given of the current measures taken for its solution.

The primary object of the work is to convey an understanding of total war. In that it succeeds. It gives a picture of what it means when an entire nation must go to war, subordinating all else it holds vital to the one aim of achieving maximum military effectiveness. It is a sobering picture. We are called upon to cope with problems so ramified and intricate that they threaten to escape comprehension. It is painfully difficult for a nonmilitary people like ourselves to grasp the true nature of the challenge, to accept it, and to organize to meet it successfully. It is sobering because it reveals how deep-seated ultimately and inevitably must be the effects on our individual lives, how disruptive of personal hopes and plans.

Finally, the book deals with postwar readjustment. Four essays are devoted to this phase: one on the economic costs of war, one on the economic problems of reconstruction, one on the economic bases of permanent peace, and lastly one entitled "The Outlook for Capitalism."

It is the subject of these last chapters that gives this reader, at any rate, the greatest concern. That we will win the war is certain, just as it is now apparent that there could have been no other end to the Civil War despite the early demoralization, the bungling, and the gloom of military defeats. The uncertainty lies in the days that will follow the war. This conflict is more than a trial of arms. It has the same quality of social upheaval as had the Napoleonic Wars. Governments have been swept away, traditional relationships broken, accepted institutions destroyed. There can be no rebuilding of the old in an illusive hope of a return to "normalcy." That way will lead only to repeated disaster.

These chapters set out the conditions needed to ensure continued domestic prosperity and permanent international peace—sustained consuming power at home and free exchange of trade abroad. It will not be easy to win acceptance of these truths. But even after they are accepted, there will remain the more difficult task of giving them effect. To do that, we shall have to deepen our understanding of social forces and relationships, and refine our theory and our techniques in labor relations, in industrial management, and in all departments of government, legislative, administrative, and judicial. Not now, but after we have won the war, will come the real challenge to our vision and our intelligence.

HERMAN A. GRAY

New York, N. Y.

KALIJARVI, THORSTEN V., and Associates. *Modern World Politics.* Pp. xii, 843. New York: Thomas Y. Crowell Co., 1942. $3.75.

This textbook "seeks a place among the growing number of works attempting to review world currents as realistically as possible," which, of course, places it solidly in line with most other textbooks; but it has a claim to distinction in the character and the profusion of footnotes which greatly facilitate the handling of a common teaching problem—ready reference to standard authorities and texts. Likewise, chapter bibliographies are good, and the large number of maps of many varieties adds materially to the value of the volume.

The chapter on power politics is a splendid opener, although some will take exception to the assertion that "to expect states at their present stage of development to accept any international code as binding upon them is wishful thinking" (pp. 7–8). Does this mean that international law has been and is and will be a futile academic profession? If so, why burden the book with a chapter entitled "International Law and Diplomacy," which is incorporated within the section entitled "Fundamentals of International Relations"?

The section "Techniques of the Struggle for Power" contains chapters devoted to the economic struggle for power, the press and politics, psychological aspects of warfare, military organization and institutions, the art of generalship, and sea power in modern warfare, all of which will find enthusiastic readers among students in these days.

"The Great Regions in World Politics" are identified in the orthodox manner, from which one cannot dissent, but certain portions of this section attract notice. Seventeen of the twenty-six pages of the chapter labeled "The United States and Latin America" do not deal with that subject. Six of those pages are devoted to a survey of the United States, 1918–42; the last two pages deal with the Far East, the Pacific, and "Global Strategy." The chapter on the Far East is poorly done, being both sketchy and inadequate.

A strong section of the book is labeled "Recent Trends in International Relations," embracing chapters on war as a symptom of our social crisis, the new pseudo science of geopolitics, technology and war, totalitarianism at war, democracies at war, fifth columns, plans for a new world order, and peace planning. All students of the subject of international relations should emerge with a keen appreciation of the difficulties to be overcome and of the practical devices at hand for meeting those difficulties. Beyond that, the student should be inspired with a desire to contribute to the efforts for a better world in which to live by becoming well informed about conditions, by formulating definite and clear-cut opinions thereon, by disseminating those opinions tactfully but steadily, and by scrutinizing the attitudes and actions of public officials. This book will be useful toward these ends, and the questions at the end of each chapter should serve to direct student attention to problems and issues, whether or not the instructor deigns to use them formally in class.

WILSON LEON GODSHALL

Lehigh University

SARKAR, BENOY KUMAR. *The Political Philosophies Since 1905,* Vol. II: *The Epoch of Neo-Democracy and Neo-Socialism (1929–).* Part II, pp. v, 558; Part

III, pp. v, 356. Lahore: Motilal Banarsidass, 1942. Rs 12/– and 5/– resp.

The first volume of the work under review was published in 1928 and covered the years 1905–28. In bringing the work up to the present date, the author has divided his material topically into three parts of which the second and third are here reviewed. Professor Sarkar interprets "political philosophy" in an exceedingly broad manner. Part I of this volume, according to the publisher's announcement, discusses "freedom, demo-despotocracy, neo-socialism, neo-capitalism, neo-democracy as well as constitutional and legal categories." The second part comprises a chapter on "Ideas and Ideals of Economic Welfare" and one on "Ideas and Ideals of International Relations." Part III covers such topics as theories of progress, race questions, population problems, and religion and moral personality.

The author's method is not one which will be familiar to Western readers, nor is it likely to commend itself to them. Large sections of the book are constructed after the fashion of a scrapbook, arranged chronologically within the broad headings enumerated above. Two sentences on the English Coal Mines Act of 1930, as an example of economic planning, are followed by a condensation of an article by the author on "Cartels in Japan" (Part II, p. 30). Juxtaposed items may have less mutual relationship than these two. Thus a six-page treatment of the social philosophy of William Ernest Hocking (based on a talk delivered by Professor Sarkar before the Bengali Institute of Sociology) is followed by a four-line item reporting J. Leyden's demonstration that "logical mentality is existent among the primitives" (Part III, p. 26).

When the author deals with such topics as international relations, imperialism, and race relations, however, his writing becomes somewhat less disconnected. There is much in these sections that will give the Occidental reader a clearer insight into the feelings of members of subject races than many of us have. Here we learn that Professor Sarkar begins his account of world ideologies with the year 1905 because in that year, with the Japanese victory over Russia and "the glorious Bengali revolution," a new era opened. From that day to this the ideology of Asia-for-Asians has been waxing. Whatever may be the outcome of the present war, that movement, he predicts, will continue. Empires will continue to decline and white hegemony will pass. The author is more sure of the second trend than of the first, because he recognizes that "an Asia which is de-albinized, i.e., liberated from albinocracy or Eur-American imperialism may be nothing but a continent which is ruled as a colony of Turkey or as a system of Japanese dependencies" (Part II, pp. 473–74). Nevertheless, he declares, "Millions of Asians and Africans believe that they can never be worse off than they are" and that "the standard of living, poor as it is, can in no event go below their two-meal-a-day, disease and illiteracy pattern to which they have been used under Eur-American masters."

Similarly in internal affairs, Professor Sarkar is disposed to see much that is customarily denominated "progress" as in reality the mere exchange of masters. Thus he declares, "The despotocracy or dictatorship openly advocated and established by Lenin, Mussolini and Hitler is of the same spiritual type of which Churchill is the latest British exponent. . . . It is because of this eternal presence of despotocracy in the human *Gestalt* that I consider demo-despotocracy to be the normal, natural, fundamental and universal political reality, —for, after all, some sort of a popular democratic background may be detected in every sociological pattern" (Part III, p. 301).

J. ROLAND PENNOCK

Swarthmore College

YOUNG, GEORGE. *Federalism and Freedom.* Pp. xvi, 204. New York: Oxford University Press, 1941. $2.50.

This might have been a more understandable volume if the author had not striven so persistently to be witty. He engages the reader in a game of logomachy which diverts attention from the purposes of the book. One example, which embodies an important part of his argument, should be enough to daunt the prospective reader:

"Now, as a book for Leviathan or a democratic diplomacy, Federalism offers great opportunities—if we *federalize* our units of power as well as *federate* them, we can build our European Union up from below on a really democratic foundation and not merely with a democratic façade. European Leviathans, like African elephants, will not carry a howdah even though it be occupied by a Parliament of Man. But, if you can fish for Leviathan in troubled waters you can put him into a receiver ship and liquidate him into oil on the waters he has troubled . ." (pp. 21–22): and so on for half a page more.

What he is talking about is a European federal system: ". . . it is proposed that the British, French, German, and Polish peoples, each federalized into a national federation; the Danish-Norwegian, the Czecho-Slovak-Sudeten and (*pace* U S.S.R.) the Baltic peoples respectively federated into Scandinavian, Bohemian and Baltic federations; with the Swedish, Dutch and Belgian nations, and possibly the Swiss, should first form a Union of Free Federated Europe. The dictatorships of Spain, Italy, Hungary, Greece, and the Balkan states would be admitted later as Federations or Nations, if they approved or applied the Declaration of Rights" (p. 30). Russia, Turkey, and Great Britain would be represented "only in respect of their European territories." This Union would represent Europe in the League of Nations, thus freeing the United States of her fear of European entanglements.

This thesis is worked out in terms of history, political science, economics, practical politics, erudition, and personal anecdotes of the writer. Occasional good ideas can be found in the flow of words, but the book could have been written in a fourth of the pages used, and the reader could have thereby been saved three-fourths of the energy required of him to search out the ideas.

CLYDE EAGLETON

New York University

CONDLIFFE, J. B. *Agenda for a Postwar World*. Pp. 232. New York: W. W. Norton & Co., Inc., 1942. $2.50.

The author of *The Reconstruction of World Trade* discusses here the problem of postwar reconstruction with a remarkably detached approach. This thoughtful and highly intelligent book is an example of both sober realism and stern faith in an organized world society.

This realism, however, is more apparent in the chapters dealing with economic matters than in those dealing with politics. According to Condliffe, "no group of nations, however powerful, can for long maintain a peace of domination." In view of modern technological developments, the validity of such a statement is more than questionable.

Condliffe does not underestimate the difficulties in the way of worldwide political reconstruction. He is careful not to commit himself on some of the most vital issues, claiming that "this is a strange war following unforeseen patterns with unforeseeable consequences." His discussion of the political background is an indispensable introduction to his brilliant economic analysis. He overcomes the mistake of many economists who devise economic formulae on a global scale without envisaging political and military realities. The space allotted in this book to political and military foundations, though not proportionate with the discussion of economics, does present a valuable introduction to the subject.

Condliffe advocates a moderate policy of economic regionalism. But this regionalism, to his mind, does not obviate the possibility or the desirability of either national initiative or superregional universal economic controls and agreements.

Agenda for a Postwar World is an incisive synthesis of suggestions aiming at the curing of national economic ills with supernational remedies. It stresses the need of specific improvements in wage policy, agricultural marketing, and exchange standardization.

A lucid description of production and trade problems is followed by conservative suggestions for the reorganization of the world's economic structure. The author raises his voice against stabilization on existing patterns, lest the less industrialized regions be limited to their past unsatisfactory economic standards. It is to be hoped that such warning will not go unheeded.

While Condliffe advocates governmental

(world government?) control of the sinews of our economic structure, he points to the risks of regulating measures. He favors control only when desirable in the interest of world peace, political security, and social security. While he does not revel in the prospect of controlled economics, he does not share the misgivings of Quincy Wright, who in his study on war emphasizes the role of worldwide economic planning in generating war. He envisages a world in which neither unregulated competitive enterprise nor reckless economic nationalism will have a place—both being incompatible with world security.

Economic nationalism does not exist per se. So long as security has to be provided for by national policies, economic nationalism and protectionism will continue to operate. It is futile to expect nations to relinquish their economic defenses when they have to guard their security. It is equally futile to expect them to surrender their economic sovereignty when they preserve their military sovereignty. Ultimately the fate of economic suggestions hinges on political and military realities.

NICHOLAS DOMAN

Chicago, Illinois

MACKINDER, HALFORD J. *Democratic Ideals and Reality*. Pp. xxvi, 219. New York: Henry Holt and Co., 1942. $1.90.

This book is a reprint of the original edition of 1919, with two brief forewords by Dr. Edward Mead Earle and Major George Fielding Eliot. We all know now that Sir Halford J. Mackinder's classic, relatively unknown in Anglo-Saxon countries, was taken over by General Karl Haushofer as one of the basic works of *Geopolitik*. It is a book fully worth the enthusiasm of its sponsors, Dr. Earle and Major Eliot, a book that no one interested in the social studies can afford to miss.

Sir Halford, a geographer by training, an administrator of conservative politics, writes with a clarity and an expository skill that his German successors have scarcely achieved. His basic thesis—that any League of Nations or other world organization must in our times be founded on the practice of the politics of balance of power—is sure to arouse opposition. But unlike such recent expositors of the doctrine as Professor J. N. Spykman, Sir Halford is of a conciliatory disposition, anxious not to annoy the idealists, but to convert them to what he calls "reality." That "reality" he has summarized in what is certainly an unduly simple formula:

Who rules East Europe commands the Heartland
Who rules the Heartland commands the World-Island
Who rules the World-Island commands the World

In the Mackinder vocabulary, East Europe is that part of Europe east of a line drawn roughly from Hamburg to Trieste; the Heartland is that part of Eurasia draining into the Arctic Ocean, the Baltic and the Black Seas, the Caspian, the Aral, and the great deserts north of the Himalayas, and the upper part of the drainage basins of the Yellow River and the Yangtze. The World-Island is the Old World—Europe, Asia, and Africa.

It must be remembered that Mackinder wrote this book not only as a protest against what he thought was the too tender idealism of British advocates of a League of Nations, but against British isolationists who made a bible of Mahan. In simplest terms, his thesis is that sea power is always dependent on a land base; that other things being equal, the stronger the land base the stronger the sea power—or air power—that can be developed on it; that in the past, great sea powers with inadequate or scattered bases have been finally overwhelmed by land powers which surrounded them and built up their own sea power (the Greek city-states by Macedon, Carthage by Rome); that British sea power has in the British Isles and in its scattered bases like Gibraltar and Singapore a dangerously narrow base; that Germany or Russia or any power that could consolidate its control over the Eurasian Heartland could build a sea-and-air power that would overwhelm Britain, even a Britain supported by the relatively small New World Island we call North America; that therefore Britain must "balance" Germany against Russia and permit no one power to control East Europe or the Heartland. To this thesis is appended in the last chapter Mackinder's own mild version of autarky; he wants neither full free trade nor economic nationalism as practiced by the German Empire of the Hohenzollerns, but a world of free nations roughly self-sufficient in key and essential products, and trading internationally largely in luxury goods.

There is no room here to criticize this thesis. Mackinder's book has passages of marvelous prescience, such as the statement that "the end of the present disorder [in Germany in 1919] may only be a new ruthless organization, and ruthless organizations do not stop when they have attained the objects which they first set before them." Yet his great concrete proposal, actually realized in the peace settlement, failed signally to achieve the results he wanted. He insisted that the best check on Germany would be the creation of a belt of seven independent states, from Poland to Greece, as a buffer between Germany and Russia. We now know how little effective was this particular effort at achieving a balance of power.

CRANE BRINTON

Harvard University

PERRY, RALPH BARTON. *Our Side Is Right.* Pp. vi, 153. Cambridge, Mass.: Harvard University Press, 1942. $1.75.

In this book, Mr. Perry has put together a number of occasional pieces—letters to newspapers, a lecture, an article, and two pieces not formerly printed. The titles are "Democracy at the Cross Roads," "The Right and Wrong of Propaganda," "Nazi Ideology," "A Bridge to Russia," and "The Moral Basis of World Order." The first piece, "Our Side is Right," gives the title to the book, which, on the whole, is an argument about what Mr. Perry would like to have as ends and means and philosophic grounds of World War II. To me it is an argument more notable for faith than for reason, and for indignation against the wrong than for a rational grounding of the right. In the course of it Mr. Perry manages to charge the evils of the times to science and its litter of materialism, anti-intellectualism, and social relativity, just as if there had never been a moment in the history of the West when spiritualism, rationalism, and social universalism were accompanied with no less cruelty and intolerance of man to man; just as if Franco, Hitler, Hirohito, and Pétain did not each postulate a spiritualist, universalist morality of his own—or for that matter, Stalin, between whose communism and our democracy as Perry understands it, Perry purports to build a bridge. By the judicious selection of doctrines a similar bridge could be built with Nazism also, and it is a matter of curious interest whether Mr. Perry would have wanted and made a bridge if Hitler had not assaulted Russia and thus made her our ally. The fact is that Mr. Perry, like the rest of us, has taken sides, and, having taken sides, proceeds to argue that he took his because it is right, and not right because he took it.

Mr. Perry's argument is that there can be one and only one universal and invariant morality, so that those who conform to it are moral and those who do not are immoral. The moral understand with Perry that "the right act is the act that best satisfies all claims as they are viewed by a disinterested and sympathetic observer. If two people need food and there is only one loaf available, it is right to divide the loaf rather than give it to one." I presume that Mr. Perry's observer is "disinterested" in that he is a spectator who does not take sides; and that he is "sympathetic" as well as disinterested, in that he cares, but does not care more for one of the two people than for the other. His disinterested sympathy or sympathetic disinterest cannot in fact be distinguished from indifference. If Mr. Perry's loaf were divided equally between his two people and if the result of that equal division should be that both died, that would be moral for Mr. Perry. If the loaf should be divided unequally so that one man survived, that would be immoral.

Of course, this is not at all what Mr. Perry believes in and desires. In point of fact, he is expressing a fighting faith in a world of his choice, a world, abstractly, in which people who are different from one another may live together equally safe and equally free. He has thrown his weight in favor of such a world, and really invokes his Cosmic Onlooker to choose it too. In such a world there are Asiatics and Africans as well as Europeans and Americans; there are Communists and Confucians and Buddhists and Brahmins and Mohammedans and Jews as well as Christians (outside of Franco's Christian Spain and Christian Vichy France and Christian Fascist Italy). They are right, because they are on our side. Yet Mr. Perry's specifications of this world ignore them and their differences from him, and center all the virtues of the past and future of civilization in the term "Christian." Once more the dynamic behind the "disinterested and sympathetic spectator" is the power and disposition of a parochial preference.

On the record, the spirit of democratic give and take, live and let live, is far more efficacious among those peoples for whom science, anti-intellectualism, and social relativity make the climate of opinion. Those are the democratic peoples whose side, Mr. Perry is sure as we all are sure, is right. If his rationalization of this right involves a paradox, so much more praise to his heart.

H. M. KALLEN

New School for Social Research

REVES, EMERY. *A Democratic Manifesto.* Pp. 144. New York: Random House, 1942. $1.50.

"According to my philosophy," the late Aristide Briand once informed the Council of the League of Nations, "peace is nothing but the absence of war." The observation is important for the light it sheds on the political thinking of a whole generation. In the years of the Great Truce, statesmen everywhere conceived of peace in just such narrow and negative terms. Peace and the status quo were identical, and both were to be defended by avoiding war at any cost. Thus the predominant conceptions of statesmen, as well as considerations of material interest, drove them straight along the road to nonintervention and to Munich. Politics in the cause of peace became a succession of disastrous betrayals.

It is against the dominant political ideas of the period between the wars that Mr. Reves directs his fire in this stimulating little volume. The present world chaos, he believes, is the result of "the complete disruption of all the moral and spiritual values which history has developed." We must, therefore, go back to fundamentals if we are to create a democratic order after this war—to an examination of the elementary principles on which our social and political life rests. Specifically, we must recognize that freedom and compulsion cannot be regarded as contrasts, but possess a close functional relationship; that democracy can be made to work only if "we are prepared to create the necessary defenses for a democratic regime"; that nationalism and national sovereignty have been outmoded by the imperious thrust of industrialism towards universalism; that real independence can be achieved only through its limitation, and that we need a new "Declaration of Inter-dependence"; that peace depends, in fact, upon the justified use of force; and that we can never assure its existence until we have established a world order with universal coercive law.

Each of these points and a number more are trenchantly argued; and while Mr. Reves says very little that has not been said many times before, his style is sprightly and his book is a useful primer in approaching the problems of the postwar world. Since he has set out to compose a manifesto, it is perhaps unfair to take him to task for a neglect of the methods by which the ends he envisages are to be realized. But he has not been sufficiently aware, it seems to me, of the really radical changes in our domestic social orders which the adoption of his program of international relations would necessitate.

J. DONALD KINGSLEY

Antioch College

FERRERO, GUGLIELMO. *The Principles of Power.* Pp. xi, 333. New York: G. P. Putnam's Sons, 1942. $3.50.

The late Professor Ferrero believed that he had discovered a new key to the understanding of world history in the reciprocal fear relationships between arbitrary rulers and despotically ruled subjects. This posthumous book is an effort to elaborate the thesis. "Government," he alleges, "is the highest manifestation of that fear in man that he himself inspires by his attempts to free himself of it. That is possibly the most profound and the most obscure secret of history." It is this fear of the people by government that leads to the harshness of dictatorship. Revolutionary governments are particularly subject to such fears because of the excesses they have committed in gaining power, and the fact that they are necessarily led by a minority group. The only palliative for this universal fear is "legitimacy"—a state of beatitude that comes with time and moderate administration.

The author defines "legitimacy" in various ways. "Legitimate government, then, should be efficacious government, good government" (p. 132). "A government is therefore legitimate if the power is confined or exercised according to principles and rules accepted without discussion by those who must obey" (p. 135). In another place he writes: "A principle of legitimacy is never isolated . . . it is always in harmony with the customs, the culture, the science, the religion, the economic interests of an age" (p. 144). In these definitions and in others that he implies from time to time, the author alternates in using legitimate government as synonymous respectively with good government, popularly accepted government, and long-established government—three qualities that are not necessarily related.

In addition to being loosely defined, Professor Ferrero's thesis is argued in a colorful rhetoric, pleasing to read but not likely to persuade social scientists. The greatest weakness of the book, however, is its provincial Italian approach to the problem of evidence. Despite the subtitle "The Great Political Crises of History," discussion centers on Italy, France, and Switzerland, to the exclusion of relevant data from any other parts of the world. The author attempts to justify this selection by adding the unnecessary proposition that only Christian governments have been legitimate. Yet proofs extracted mainly from an examination of political actions during the various French Revolutions fall far short of establishing broad generic propositions regarding the nature of government.

The author's limited view also prevents him from considering the role of government as an arbiter between contending economic interests rather than as the ruler of a subject people. Economic interests are mentioned only twice in the book, and then in an offhand way, as illustrated by the above quotation from page 144. Had Ferrero turned his attention to nineteenth-century America, he might have been forced to concede the primacy of economic over political power in both public esteem and concrete reality. As Commodore Vanderbilt testified: "The law, as I view it, goes too slow for me when I have the remedy in my own hands." Had the author seriously considered the government of Illinois or Indiana in say the eighteen-thirties, it would have been hard for him to write: "Because of a contradiction inherent in the nature of man . . . every government lives in permanent fear of its subjects, and of the coercion it must exercise on them to obtain obedience."

Brought up in a freer environment of expanding private enterprise, we Americans may tend to underestimate the purely political aspects of governmental power. The author's preoccupation, however, with those states of western Europe where the traditions of dictatorial government have lingered and economic enterprise has been less dynamic, seems to have prejudiced him at least equally in the opposite direction.

THOMAS C. COCHRAN

New York University

DE FÉLICE, THÉODORE. *Gouvernements nationaux et accords internationaux.* Pp. 168. Geneve: Georg et Cie, S.A., 1942. Frs. 7.50.

Because he is interested in speeding up the process of treaty ratification in democratic countries and in enabling international organizations to do constructive work without being retarded by domestic ratification requirements, the author of this monograph has collected a mass of precedents to show how executive authorities have encroached upon the legislature in regard to treaty matters. Confining himself to Switzerland, Great Britain, and the United States, Mr. De Félice presents numerous examples of treaties concluded by the executive without parliamentary sanction despite constitutional provisions requiring such concurrence, of special executive competence concerning the carrying out of international agreements, and of grants of authority to administrative officers to collaborate with corresponding functionaries in foreign nations in regard to treaty provisions.

No new facts are unearthed and no novel conclusions are reached as a result of this research into treaty practice in the three countries studied. Undoubtedly American constitutional experts would find fault with the chapters dealing with Executive agreements because relatively so little space is devoted to agreements of a political character and no mention is made of outstanding political accords such as Lansing-Ishii, the Destroyer-Base agreement, and others. However, American students can well profit from the comprehensive survey of Swiss and British experience with which they are not apt to be so familiar, and besides, the volume's listing of specific treaty provisions and of actions taken in regard thereto is extremely useful for reference purposes

The chief value of the book lies in its suggestions for the future of international organization. The extensive survey of three kinds of national practice leads up to the endorsement (pp. 156–57) of the 1932 proposal of the International Law Association that treaties signed by state representatives at international conferences shall become binding unless the states indicate dissent within two months after signature. If international bodies are to be endowed with genuine authority and if the evils of individual consent are to be overcome, some such arrangement will have to be adopted. Despite the obvious dangers involved, national officials concerned with international problems and international agencies like the International Labor Organization or the International Postal Union must be freed from the everlasting necessity of legislative ratification for steps planned. Mr. De Félice's competent gathering of the evidence shows how far the executive has already gone in three countries, and gives grounds for encouragement about future procedures. Also, those who are hoping to avoid another Senate battle over ratification of schemes for postwar international collaboration will find useful precedents for wide executive discretion in such matters.

PAYSON S WILD

Harvard University

DAVIS, FORREST *The Atlantic System.* Pp. xvi, 363. New York: Reynal & Hitchcock, Inc., 1941. $3.00.

The distinctive feature of this book lies not in the presentation of new material so much as in the arranging of material around the theme of Anglo-American control of the Atlantic during the past half-century. The title comes from a phrase coined in 1906 by Henry Adams, who foresaw the necessity of counteracting the German threat to the Atlantic world.

Until the last decade of the last century, such co-operation was spasmodic. While the Royal Navy did more than the Monroe Doctrine to keep Europe out of Latin America, there were numerous occasions, as every schoolboy knows, when we ran afoul of that same great navy. The Venezuelan affair of 1895, however, was the last serious quarrel with England; from that time on, things moved rapidly toward collaboration. At the turn of the century, we were almost the only friend England could find in a hostile world; on the other hand, we had the comforting knowledge that the Royal Navy was our first line of defense. England's recognition of our paramount interest in the Caribbean and the recognition of common interests in the Pacific marked the new trend. During the first World War, the author contends, we fought primarily "not for the betterment of mankind but . . . for the command of the Atlantic," and he goes on to argue that that situation had not changed materially by 1941. The story reaches its climax with the dramatic meeting at sea which produced the Atlantic Charter.

Though not published until after Pearl Harbor, the book was written during those later months of 1941 when the question of intervention versus isolation was a very live one. At times the author abandons the objective attitude and gives the impression of special pleading. The characterizations of Page and Borah, for example, are cases of out-and-out praise and condemnation, without giving the other side of the picture.

The book is based primarily upon secondary works and memoirs, from which have been extracted ammunition to defend the thesis. It is consequently a less substantial contribution to the subject than the Sprout volume, *Toward a New Order of Sea Power,* which went far more deeply into original sources and presented the material in a far more objective fashion. With those limitations, however, Mr. Davis' well-written and suggestive volume serves a useful purpose in bringing together much interesting discussion of one of the cardinal points in our foreign policy. ROBERT G. ALBION

Princeton University

BENDINER, ROBERT. *The Riddle of the State Department.* Pp. xiii, 231. New York: Farrar & Rinehart, Inc., 1942. College Ed.: $1.60; Trade Ed.: $2.00.

The Department of State is a riddle to the author, Robert Bendiner, managing editor of the *Nation,* because he cannot understand why it has been so long "neutral" in the great conflict between the forces of democracy and totalitarianism when the President has been inclined all along to swing the power of the United States in favor of the democratic nations. The study was inspired by the Union for Democratic Action, which "co-operated generously in its development." Mr. Bendiner thinks the Department inept, and responsible for four great mistakes in policy, appeasements which have strengthened the power of Mussolini, Hitler, and Japan: failure to embargo munitions to Italy during the Ethiopian war; embargo of munitions to the Spanish Loyalists during the Spanish so-called Civil War; appeasement of Vichy and through Vichy of Hitler and his allies; and appeasement of Japan. So Mr. Bendiner proceeds to analyze these policies first, then the key officers of the Department. The result is a general indictment except for a few individuals: Secretary of State Hull, despite his personal integrity, for years showed himself somewhat behind the turbulent times, too preoccupied with his economic program; Under Secretary Sumner Welles, despite Groton and Harvard, is an acceptable convert to the cause of the people's war, particularly since his Arlington Address; Political Adviser Stanley Hornbeck has been sound in his policy, belatedly adopted, to come to a showdown of force with Japan; young Lawrence Duggan is a praiseworthy protégé of Welles; but most of the other principal officers of the Department are intellectual or social snobs who look upon diplomacy with the disinterestedness of chess players, without regard to the aspirations of the peoples concerned.

The author had no "inside information," as had the favored Messrs. Davis and Lindley in their contemporary book *How War Came,* a "White Paper" for the administration's foreign policy. Mr. Bendiner relies on printed state papers, and too heavily, we think, on the lucubrations of journalists and columnists like Pearson and Allen, Alsop and Kintner, and the Washington correspondents of the *Nation.* Perspicacious as may be these commentators, they certainly are not objective scholars; neither is the able Mr. Bendiner. As the President himself declared to the people in his radio address of October 12, 1942: "I can say one thing about our plans: they are not being decided by the typewriter strategists who expound their views in the press or on the radio." No scholarly judgment can be made until confidential archives, accessible in part so far only to favored journalists, are opened fully to responsible historians. What, one may ask Mr. Bendiner, would have been the effect on the Latin American policy of a clean-cut break with the Franco government? And how ridiculous Mr. Bendiner's strictures against the administration's Vichy policy already seem after the events of November 8, 1942! The author frequently makes many highly disputable statements (for a few, see pages 130, 143, 152, 218). In short, the book is a brilliantly written polemic rather than a scholarly study, and a provocative opposite to Davis and Lindley's brief for the administration's foreign policy.

SAMUEL FLAGG BEMIS

Yale University

WHITE, LEONARD D. (Ed.). *The Future of Government in the United States.* (Essays in Honor of Charles E. Merriam.) Pp. ix, 274. Chicago: University of Chicago Press, 1942. $3.50.

This volume of essays edited by Leonard White and dedicated to the "Chief" consists of a series of contributions by Mr. White and ten of Mr. Merriam's former students, each of whom speaks with well-deserved authority on the topics chosen. The framework of the series is provided in the introductory essay, and autobiographed account of the Education of Charles E. Merriam. This is a kind of thumbnail sketch of one of the truly great political scientists of our time, one who has contributed fruitfully and abundantly to a broadening of the scope of political science and an understanding of its function and possibilities in a rapidly changing society. Not the least of his contributions has been his leadership in the application of the tools and methods of science to government and politics.

Despite the broad coverage of the contributions to the volume, one can readily relate the theme of each to some interest of Mr. Merriam's, as described in the introductory essay. In many respects the ideas of the teacher have been projected and developed in the ideas of the students.

How broad the range and diverse the themes of the essays appear when one considers the first and last titles. The first deals with The Developing Science of Democracy, by Harold D. Lasswell, and the last two with Sovereignty by Hymen E. Cohen, and World-Politics and America's Destiny by Frederick L. Schuman. The majority of the essays appearing between the one on science and those on theory (sovereignty) and world organization have to do with some phase of administration: The Future of Urbanism by Albert Lepawsky, Developments in Governmental Planning by John A. Vieg, Politics and Administration by V. O. Key, Jr., The Future of Administrative Management by Joseph P. Harris, and The Public Service and the Future by Leonard D. White.

There then remain three contributions on matters political: Political Leadership and the Press by Leo C. Rosten, The Future of the American Party System by Harold D. Gosnell, and Trends in Party Campaign Funds by Louise Overacker.

On account of space limitations the reviewer must limit his comments to two or three general observations. In the first place, the authors are all writing whereof they know. Each has already won for himself a well-recognized place in the field covered. In describing the present from which vantage point they project their gaze into the future—the central theme is The Future of Government—they proceed from a factual analysis wherever this is possible. On the whole, they are meliorists and optimists, although they do not overlook or seek to belittle the obstacles in the path of a progressive civilization. They believe in the power of man to control his environment through realistic observations and the power of constructive reason. They have evidently taken to heart Mr. Merriam's faith in creative evolution. With him, they apparently are confident that "the human spirit through science, reason, faith, may bring light and life and healing on its wings, if so they will."

The reviewer would congratulate him to whom this volume is dedicated and those who contributed to it on these challenging views of the things that may become, if not the things to come.

William E. Mosher
Syracuse University

Friedrich, Carl J., and Edward S. Mason (Eds.). *Public Policy.* Vol. III, pp. vii, 275. Cambridge, Mass.: Graduate School of Public Administration, 1942. $3.00.

This issue of the Yearbook of the Graduate School of Public Administration of Harvard University is naturally preoccupied with matters relating to the war. Almost half the volume deals with "War Morale and Civil Liberties"; the other half is about equally divided between "Labor and the War" and "Some Problems of War Finance and Government." As usual, the volume is more concerned with policy than with administration. The first section contains four chapters by as many authors. Gordon Allport points out that we have better facilities for measuring morale than we have had previously, and that significant conclusions can be drawn from such measurement; Edward L. Bernays presents a hortative discourse on "The Integration of Morale"; David Riesman offers a long, well-documented, penetrating, but somewhat academic exposition of the legal status of civil liberties in a period of transition, and points the way to the development of more satisfactory criteria for the definition and evaluation of civil liberties; Alan Burr Overstreet summarizes administrative plans for the control of civil liberties as of the time the article was written.

The section on labor and the war suffers more from the rapid transformation of conditions since the material was written. Three chapters by D. H. Davenport, Earl G. Latham, and Charles E. Wyzanski, Jr., discuss mobilization of labor resources, national defense labor policy, and labor disputes during the war. While all three make significant summaries of the situation as of the time of writing, all three now have a dated, academic flavor.

The last four chapters deal with problems which in content and method suffer less from the high speed of wartime developments. James Tobin presents a technical analysis of "The Role of Statistical Forecasts in Planning for Defense"; Wayne C. Grover briefly discusses "The Control of Industrial Mobilization"; Laurence J. Barber, Jr., offers a case study of national defense and local government in the Quincy, Massachusetts, area; and Alvin H Hansen briefly examines the effects of war on our economic structure and the implications for public policy.

No effective appraisal of this varied material is possible in a brief space. As usual, the Yearbook is a volume of significant and informative comment, but it suffers this year from relying somewhat heavily on a topical discussion of problems which the times have modified faster than books can be printed and distributed.

HARVEY PINNEY

Washington, D. C.

TINLEY, J. M. *The Native Labor Problem of South Africa.* Pp. xxii, 281. Chapel Hill: University of North Carolina Press, 1942. $3.00.

Books such as this one are timely and important now. Exploited groups in various parts of the world are becoming vocal. Objective research into the causes of this grievance, and investigations to see the reciprocal effects of exploitation, are needed. Perhaps nowhere in the world, unless it be in our own southland, is the problem of racial discrimination more keenly felt than in South Africa.

Professor Tinley, in setting forth the labor problem, goes very thoroughly into the general social problems which are root causes of the difficulty. Experience and training qualify him to make this study a thorough and sympathetic piece of research. He was born in South Africa, served with the government there, and finally returned to Africa from the University of Minnesota, on a fellowship, to complete this investigation.

Four groups make up the South African population: native 68.8 per cent, European 20.9 per cent, Asiatic 2.3 per cent, and colored or mixed blood 8 per cent (p. 11). Between these groups there are vast discriminations. The European has regarded the native as part of the natural resources of the country, and, as such, he is designed for European advantage. Unskilled Europeans are paid an average of £234 a year, whereas the native receives but £44 for the same work (p. 133). The native pays from 2 to 3 per cent of his income in taxes, whereas the European may receive up to £400 and go practically untaxed, yet "he is supplied with services, that are infinitely superior" (p. 197). The natives are hedged about by so many laws "that it is almost impossible for them to avoid becoming lawbreakers" (p. 252), thus losing much time in arrests, which further enhances labor shortages. The native two-thirds of the population is not allowed a seat in government (p. 8). The native is segregated in the cities, which leads to overcrowding, prostitution, venereal disease, and the breakup of family patterns. Even in rural areas he does not live on land which he owns, but rather on crown lands or lands owned by Europeans. Here he works for wages or for the right to run a few cattle and farm a few crops in return for his services to the European. Malnutrition is universal; infant mortality is as high as 50 per cent (p. 237). The standard of living is so low that "further reduction would mean virtual starvation" (p. 209).

Professor Tinley suggests remedies in his last chapter, "Where and Whether." "The first and foremost requisite is a change of attitude on the part of the European population" (p. 244). The native must have a greater share in the national income. His taxes must be reduced. Both these measures will increase his buying power. He must have better educational facilities; particularly is this true for the agricultural serfs. Further basic industries must be built up which will have as their purpose not only European welfare but substantial improvement of the general welfare (p. 250). If this is not done and gold mining collapses, "the domestic economy of South Africa will collapse like a house of cards" (p. 249).

The author concludes his work still holding the European or white point of view: We must advance the position of the backward peoples, this will be to our economic advantage, but we must do it without unduly jeopardizing the high standard of living of the white population itself. Some day we may go beyond this, cast aside our racial ethnocentricisms, and work out a cooperation based on true racial equality.

DESMOND W. BITTINGER
McPherson College

INTERNATIONAL LABOUR OFFICE. *Wartime Transference of Labour in Great Britain.* Pp. vi, 163. Montreal, 1942. Paperbound: $1.00; Clothbound: $1 50.

This report describes the measures employed to effect necessary reallocations of manpower in wartime Great Britain, and the social and economic problems encountered in the series of adjustments thus occasioned. A preliminary chapter explains the extent to which transference has been essential, and traces in outline the steps or stages by which the present manpower program has developed. It describes the framework of legislation and administrative regulation within which the manpower program operates.

The second chapter appraises the several incentives used to encourage workers to transfer into essential wartime activities. It interprets the Schedule of Reserved Occupations, the "priorities" or "dislocation" unemployment of 1939 and 1940, the adjustment of wages (meaning weekly earnings) to stimulate transfers, the redefinition of "suitable employment" in unemployment insurance provisions, and the attempts to secure transference by persuasion and appeal. The chapter concludes with a discussion of the reasons why these measures proved inadequate.

Chapter III (the major portion of the entire volume) presents an extended discussion of specific techniques used to enforce transference. The report explains the British method of registration (by age groups and occupations) and describes devices used to effect redistribution of males and females, as well as such special groups as dock workers, shipyard workers, and building tradesmen. The system of classification of local areas in terms of their labor supply status is given particular attention, as are the planned concentration of production, "ring fence" arrangements in chemical, iron, and steel industries, and the creation of "mobile corps" in engineering and machine tool industries. The chapter closes with a description of the work of "hardship" committees and of enforcement problems.

Chapter IV is concerned with social problems encountered in the process of labor reallocation. It describes the various wage adjustments and allowances found necessary to effectuate the program and indicates the methods adopted to meet housing and other welfare problems. Chapter V outlines the administrative arrangements in the British manpower program. A three-page description of the present situation makes up the concluding chapter.

The report is well organized and effectively written. In the opinion of this reviewer, the only shortcoming is its brevity and consequently limited treatment of some phases of the British program. Readers in the United States will be repeatedly impressed with the close similarity between the steps in the process here described and those through which this Nation is now passing. It is immediately apparent that much can be learned from British experience, so that this volume becomes required reading for those who are directly engaged in our national and local programs of manpower mobilization.

DALE YODER
University of Minnesota

McCONAGHA, W. A. *The Development of the Labor Movement in Great Britain, France, and Germany.* Pp. xii, 199. Chapel Hill: University of North Carolina Press, 1942. $2.50.

This book may be described as an indictment of radical intellectuals and of political parties as subverters of labor. As for their conviction, most readers as judges will probably be of the same opinion still. Basic union functions such as collective bargaining, the control of working conditions, and the adoption or administration of ordinary labor policies are discussed in a merely incidental manner. The influence of intellectual and political radicals on labor is, of course, an important subject, and the volume contains convenient if not always unbiased summaries of the relations between trade unions and such groups as the German Social Democratic Party and such intellectual leaders as Marx and the Webbs. A movement so influential as Marxism is introduced to the reader as a "bizarre distortion" of a discarded theory of classical economics (p. 4). The admitted limitations of Marx and many other intellectuals might perhaps have been described in less dogmatic and invidious terms. A taste for strong words and vigor of style more than once betrays the author into extreme statements, as when he refers to the "autocratic" conduct of the American Federation of Labor or when he says that in France after 1870 "all previous organizations were completely wiped out" (pp. 12, 83).

There is much emphasis on the dilemma of unions in attempting to reconcile their international ideals with the nationalistic tendencies of the first World War, but there is no satisfactory analysis of the underlying conceptions of internationalism or of the forces outside the labor movement which created the dilemma. The discussion of the period after the first World War is brief and somewhat perfunctory. Readers who seek an understanding of the immediate background of the labor movement today will be disappointed. There is little, for example, about the opposition to fascism or the role of labor in Great Britain in organizing the nation for war.

The author disclaims originality and states that the book is immediately occasioned by the disappearance from the market of Professor Perlman's *Theory of the Labor Movement.* That work is, of course, "an excellent little volume," but there will be dissent from the view that it and it alone gave "easy access to a knowledge of labor institutions beyond our national borders" (p. v), or that the present volume fills that role.

WITT BOWDEN

Washington, D. C.

BOWMAN, D. O. *Public Control of Labor Relations.* Pp. xi, 504. New York: The Macmillan Company, 1942. $5.00.

The purpose of this study is to present at once a history of the National Labor Relations Board with something of the problems incident to its current operations, and to relate the experience of this agency to the basic problems encountered by any public administrative agency which attempts to control relationships in our economy.

The book is divided into six parts: the legislative background of the National Labor Relations Act, the unfair labor practices prohibited by the act, an analysis of the difficulties encountered in the certification of collective bargaining representatives, the procedures of the Board, its organization and personnel, and finally an appraisal of the act and the record of the Board.

To provide a better perspective and understanding of the work of the National Labor Relations Board, a history is told of Federal legislation which created labor boards during the half-century preceding the passage of the National Labor Relations Act. The constitutional issues growing out of this legislation are discussed.

This narrative describes the work of labor boards prior to the first World War, when public opinion was in general hostile to administrative governmental agencies. The changing scene from the first World War to 1935 is traced as it relates to the creation of labor boards and the meager powers granted to them. With the exception of this very brief historical background and a bare mention of "Little Wagner Acts," the book is devoted to a study of the National Labor Relations Act and the work of the Board.

Mr. Bowman has made clear the influence of the individual philosophy of Board members in formulating the policy of the Board and in exercising its quasi-judicial rights. The effects of the act and the decisions of the Board are graphically presented in the closing pages, and constitute the portion of the book which is intended to provide evidence of legislative and judicial sins of omission and commission, while the reader gets the impression that insofar as the Board has made mistakes it is because of legal restrictions imposed upon it.

Mr. Bowman has used a voluminous quantity of primary source material, drawn principally from Senate and House Hearings and from cases arising out of Board actions. He has refrained from much reference to secondary material. The work constitutes a most valuable contribution to literature not only in the field of Public Administration but also in Labor Law.

ALBION G. TAYLOR

Washington, D. C.

ROSS, MURRAY. *Stars and Strikes.* Pp. x, 233. New York: Columbia University Press, 1941. $2.75.

Stars and Strikes is a history of unionism in the motion picture industry. It traces the development of organized labor from 1916 when Samuel Gompers initiated a campaign to invade Hollywood, the settled home of filmland, to 1941 when the motion picture industry presented a solid front from "the highest-paid directors to the lowly electricians." This represents a substantial achievement for organized labor, especially when one considers that Los Angeles for years has considered itself the "citadel of the open shop."

This history includes the bitter and destructive jurisdictional union quarrels, the petty jealousies of labor leaders, and the resentment of the motion picture actors against the legitimate actor and the consequent distaste for equity which was controlled and directed in the East. It traces the development of the experiment with an employee representation plan in the formation of the Academy of Motion Picture Arts and Sciences, the era of the National Recovery Act, and subsequent jockeying of positions by guilds in their attempt to achieve peace and stability.

Paralleling the organization of labor, the author points out, has developed the organization of producers, with the formation of the Motion Picture Producers' Association.

Mr. Ross states that his book is "a study of the unionization of the various employee groups in the studios." An attempt is made in it to show the interweaving of the economic, political, social, and psychological forces which shape the trade union movement. Throughout the emphasis is on ways in which industrial relations work out in practice rather than in theory, and how they affect the entire industry rather than a special group.

The author explains the paucity and the inaccessibility of source material in his preface. Much more might have been written into such a history; several recent chapters could now be written to bring the story up to date. However, the author has made a contribution by recording in interesting style the history and the problems of organized labor in one of the most fascinating of all American industries.

PAUL A. DODD

University of California

MARGET, ARTHUR W. *The Theory of Prices.* Vol. II, pp. xxv, 802. New York: Prentice-Hall, Inc., 1942. $6.00.

The second volume of Marget's "Reexamination of Monetary Theory" is, like the first, written as a running commentary on Keynes, this time on the "General Theory of Employment." As criticism of Keynes, Marget's procedure is this time even less satisfactory than in the first volume. Thanks to the work of Reddaway, Hicks, and Lange, the main results of the "General Theory" can now be presented in a brief equation system derived from a few relatively simple concepts. According to the rules of good interpretation (which nobody has applied with greater care to authors before 1930 than Marget himself) any single statement in Keynes's book must be considered and understood in the light of this general system, which does not lose anything of its significance if some of

Keynes's statements and obiter dicta eventually must be corrected or even rejected. Even the fact that an analytical tool of this system, although resembling in many respects a well-known concept of traditional theory, is given a new name by Keynes, is less damning than Marget seems to think, e.g., in the chapter on the "Elasticity of Effective Demand."

Moreover, Marget has not been fortunate in the choice of the Keynsian statements upon which his critical comments are focused. The first 200 pages are devoted to an examination of two points. The first is the following statement by Keynes: "So long as economists are concerned with what is called the theory of value, they have been accustomed to teach that prices are governed by the conditions of supply and demand. But when they pass in volume II, or more often in a separate treatise, to the Theory of Money and Prices, we hear no more of these homely but intelligible concepts." The second is the question as to whether the Marshallian concept of elasticity of demand for an individual good is still fruitful for a theory of output and employment *in general*. As to the first point, Marget's survey of the history of doctrine seems to the reviewer to confirm rather than to refute Keynes's dictum. Marget himself admits (page 89) its truth for such authors as Wicksell, Irving Fisher, Schumpeter, and Hawtrey, remarking only that these authorities proceeded deliberately as they did, and not without good reasons, which is a different question; the unprejudiced reader will add to this list at least Alfred Marshall after having read Marget's remarks about Marshall's position on pages 58 and 75 ff. As to the second point, Marget indulges in his unfortunate habit of discussing extensively (or rather asserting) what scarcely anybody has ever denied; in this particular case, that the factors summarized in the concept "demand elasticity" are responsible for changes in the *structure* of money prices. Quite so, but Keynes's position obviously is that such changes are of only secondary importance for the theory of output and employment *in general*. This position certainly is debatable, but unfortunately this debate, like so many others, is left by Marget "until a later work" (page 161).

The bulk of the discussion (pages 221–625) is devoted to an independent analysis of the position of demand curves, supply curves, and "stream equations" in monetary theory. Marget proceeds by laying down and commenting on forty propositions. Most of them are admittedly of elementary nature and accepted by the vast majority of economists. A considerable number of them lack precision, covering as they do half a page or more and representing rather general reflections and not propositions in the usual sense of the word. They are accompanied by lengthy footnotes, usually covering more than half of the page and describing the development of the concept or proposition in economic literature. Marget's peculiar approach, the mixture of polemic, methodology, and theory proper, renders these notes necessarily fragmentary. And yet, undoubtedly, this type of work is Marget's Mecca and represents the most valuable part of the book. It reminded the reviewer of the shelves-filling, awe-inspiring commentaries on the *Corpus Juris Romani* he studied in his youth. Indeed, nobody would be better fitted to give us a similar commentary on the *Corpus Scientiae Economicae* than the author of *The Theory of Prices*.

There are only a few places at which Marget ventures into systematic theoretical analysis. Besides the valuable examination of the Keynsian concept of elasticity of prices, we mention the analysis of the concept of "expected" and "hypothetical" price (pages 225–26), and primarily the brief outline of Marget's own theoretical approach (pages 478–98) of "stream equations," which he intends to elaborate in forthcoming monographs. In analogy to the so-called basic equation of monetary theory ($MV = PT$, which reads: money stock times velocity = volume of transaction times price level), Marget suggests the study of the simultaneous or successive impacts of monetary changes on the different "compartments" of the economy, by a series of equations $M_1V_1 = P_1T_1$, $M_2V_2 = P_2T_2$, and so forth. The effect on the particular price of the good the production of which constitutes a compartment, would be determined, theoretically, with reference to the particular supply and demand schedules for the good in question. Marget does not seem to realize that these demand schedules (to restrict our remarks to the latter), in contrast to the Marshallian ones, cannot be considered as basic *data* of the economic system, but indicate the *reaction* of the whole system to a supply change *in one compartment;* they do not explain anything, but are that which requires theoretical explanation. To give a fruitful exposition of the reaction of a whole complicated system of a great number of variables and interrelated functions, not determined as these are as to form, is a task equally impossible from the mathematical and empirical viewpoint. Therefore, in elaborating his program more closely, Marget will have to be satisfied with approximations and short cuts, and will be forced, as were his predecessors, to sacrifice rigorousness in order to gain in applicability. From this viewpoint again Marget's criticism of Keynes is basically inappropriate, because it is based on the inevitable lack of rigorousness instead of examining the applicability. Whether or not it is possible to write monetary theory in terms which have wider applicability than the Keynsian theory without losing even more of rigorousness cannot be found out by methodological criticism but only by presenting us with the developed theory itself. The proof of the pudding is in the eating, not in the recipe. HANS NEISSER

University of Pennsylvania

SCHAFFTER, DOROTHY. *State Housing Agencies.* Pp. xiii, 808. New York. Columbia University Press, 1942. $7.50.

The traditional pattern for the evolution of a public function is local experimentation, then state assumption of part or all of the responsibility for the function, and finally a substantial measure of Federal participation through the grants-in-aid system. Public housing is the exception in that it was instituted by the Federal Government and developed largely in the sphere of Federal-municipal relations. Miss Schaffter's thesis is that the states should be integrated into this program. "A problem as expansive as the public housing situation in the United States can probably not be solved without the participation of the national government, the states, and the cities and rural government, in addition to private industry."

The need for state participation in housing has not gone entirely unappreciated. Ten states, led by New York, have developed active housing agencies, and eleven others have rudimentary institutions of considerable potential value. Much of the volume is concerned with a detailed description of these state housing agencies, covering legislation, personnel, appropriations, court cases, expenditures, intergovernmental relations, functions, and many other aspects of these administrative bodies.

A final chapter is devoted to summary and conclusion, including a discussion and criticism of state housing agency plans, types of administrative organizations, their operation, finances, and functions. Miss Schaffter finds the present bodies weak and ineffective, but she considers strengthening these agencies very important. Many of the defects of the present United States Housing Authority, according to the author, are due to the lack of a balanced program in terms of governmental participation. Other recommendations as to specific changes in administrative machinery are presented and supported with argument and data.

The book's usefulness is limited by its shortcomings of organization, especially the very large amount of detail. Documentation is considerable, but inadequate as to form. A ninety-two-page bibliography is composed mainly of references to bills, statutes, appropriation acts, and agency reports. Supporting economic and general political materials are also lacking. The book contains much useful information and an able presentation of a point of view. HAROLD M. GROVES

University of Wisconsin

BENNETT, HUGH HAMMOND, and WILLIAM CLAYTON PRYOR. *This Land We Defend.* Pp. xv, 107. New York: Longmans, Green & Co., 1942. $1.50.

This slim volume seeks to bring to the average layman the story of soil conservation. Its nineteen illustrations look like shots from "The River" or "The Plough that Broke the Plains." I am certain that Mr. Pryor would take it as a compliment if I were to say that the style of the text is like that of the commentary to those pioneer documentary films. There is the consciously hard-hitting prose; the explosive sentence, the hammerlike short paragraph; the devastating statistics, the story of Fred Johnson sharecropper, and his wife and eight children as the vehicle for "The Answer" There is the adaptation of the crusade to wartime. we must save the soil if the war is to be worth winning. This land we defend.

One suspects that Dr. Bennett blessed this retelling by a former staff writer of the AAA and the Soil Conservation Service. His own scientific statements about soil conservation have been made in heavier tomes, the first in 1913, the latest only a year or two ago. One may hope that this dramatic book will reach a wide audience. Yet it omits perhaps the most dramatic story of all. Mr. Pryor states that "the first state soil conservation district law was adopted in 1937 In March, 1942, there were more than 700 districts in operation in 39 states, representing a membership of more than 1,500,000 farm families and a total acreage of over 413 million" (p. 88).

In that colorless statement is the monument to Hugh Bennett, for twenty years the apostle of soil conservation, preaching a gospel of national regeneration to deaf ears. Because he was ready, he could seize his opportunity. It came, not because the country accepted his logic, but because a depression made us seek acceptable activities for work relief programs and because a year of dust storms dramatized the issue. Dr. Bennett found his coadjutors: M. L. Wilson, apostle of agricultural democracy, and Philip Glick, astute young lawyer. Between them they invented a new governmental device that promises to defend this land. True to the corporate tradition of personal anonymity of the Department of Agriculture, the authors do not permit this drama to show forth on the pages of their tract. It is as meaningful for the future of the country as any picture of gullied land reclaimed by check dams or terracing.

CHARLES S. ASCHER

New York, N. Y.

SANDERSON, DWIGHT. *Rural Sociology and Rural Social Organization.* Pp. xvii, 806. New York: John Wiley & Sons, Inc., 1942. $4.00.

This is the third general text in rural sociology published within two years. Each author has emphasized certain portions of the field cultivated by rural sociologists: Smith, the data on population and the settlement and tenure patterns; Landis, the social psychological processes of personality formation; Sanderson, the organization and agencies and communities in rural America.

Professor Sanderson's book opens with a lucid distinction between analysis and policy-making or reform.. This distinction is needed particularly by beginners in sociology. Unfortunately the distinction is not maintained; reformistic and ethical remarks appear throughout the book. Nonetheless, the discussion of procedures for organizing groups and communities is more adequate than can be found in any other introductory book.

One is surprised to find a sociologist allowing geographical influences so large a sphere of operation. Perhaps the omission of comparative materials on rural societies of other countries explains this generosity. This localism in choice of materials—dictated doubtless by limitations of space—is a lapse from the author's earlier scholarship. Students are likely to interpret America's special rural structure as more typical than it is. To assert that there is no rural society as a type but only rural societies does not provide students with the necessary training in use of typologies. One must also be critical of the discussion of the economic aspects of rural life. Despite the unusually adequate descriptive materials that Sanderson provides in these chapters, a student untrained in economics would accept the agricultural policies of the last ten years as more rational and foresighted than economists would acknowledge.

This book is distinguished in its portrayal of the development of our national consciousness of rural problems, and the role of rural people in the total society is discussed with insight and a freedom from special pleading.

The many types of groups and associations in rural America are severally described and evaluated with creditable concreteness. Students should know what rural society in this country is when they have finished. The handling of rural educational agencies is distinguished. But this reader was disappointed in Sanderson's chapter on the family, after reading his earlier studies.

This book will probably become the most popular text among those available. Its value as a text is enhanced by the community case studies in the appendix. The reviewer's judgment is that more students using Sanderson will take additional courses in the field, but that they will not be so well equipped with professional skills of sociologists.

C. ARNOLD ANDERSON
Iowa State College

BRUNNER, EDMUND DES. *Working With Rural Youth.* Pp. xiv, 113. Washington: American Council on Education, 1942. $1.20

A county superintendent of schools began his interview with an American Youth Commission representative typically:

"What do you want me to do?"

"Whatever you think needs doing," was the reply, "and we will try to help with leadership and by a small grant of money if that seems necessary."

"I begin to see," said the superintendent, "that you really mean it's up to me and the rest of us here to do this job ourselves in our way and you'll help us do it that way."

There was still a question in his voice.

"Right," said the staff member.

"O.K. I'm on. But I've never had this sort of proposition put up to me before."

As the above conversation would suggest, *Working with Rural Youth* tells the story of an attempt "to work with and for rural youth on the basis of democratic experimentation." This Rural Project of the American Youth Commission was carried on for thirty months in selected areas of five states. The first twenty-three months were the period of America's growing rearmament. The report was finished after rural life had been severely affected by the early months of our own participation in the war.

Four basic principles determined the nature of this demonstration in rural youth work.

1. Neither the American Youth Commission nor any other agency was to state in advance what rural youth need. Rather the needs were to be discovered democratically within the local areas.

2. The amount of outside subsidy for work in any one area was to be so small that whatever was started could be carried on through local initiative and financing, and throughout the entire project three times as much money was contributed by existing agencies working in the local area as by the American Youth Commission.

3 Not only were the adult leaders of the local community to plan "for youth," but rural youth themselves were to be brought into the planning at every stage.

4. These demonstrations were not to be limited to the work of any existing agency.

The locality selected for these demonstrations included some of the most prosperous rural communities, some communities of only average agricultural wealth, and others in the most depressed and retarded regions An effort was made not only to reach youth of open country farms, but also youth in agricultural villages, rural industrial villages, and satellite villages peripheral to urban centers.

As the different programs developed they included activities dealing with such matters as "recreation, discussions and forums, occupational and personal guidance, job placement, adult education, vocational education, social gatherings, community improvements, arts and handicrafts, rural-urban relations, co-ordination."

The greatest difficulty encountered in all of the projects centered in the jealousies and competitive spirit of organizations already at work, especially of those carrying on state-wide programs.

"Not that promises of co-operation were hard to secure. . . . But in one state in which a score or more of agencies and institutions had been quite definite with respect to services and contributions that each would make, not more than six or seven delivered even in part on the glibly phrased pledges of the first meeting. Nor was this unusual.

"Perhaps the one exception was in Georgia, where . . . the program was largely in the hands of youth themselves. 'But there's a *need,*' these youth would say when organizational or prestige difficulties arose. 'You are not going to let us down when there is a real need to be met, are you?' There is only one answer to give to the insistent directness of youth. . . ."

In spite of such experience encountered in all the states, there were illustrations of interagency co-operation.

"One of the many evidences of this is shown in the case where an agency at the state level paid most of the cost, and another on the county level furnished office space, facilities, and secretarial help. The gifts were without qualification. The objective was worthy and common to both. The combined facilities and leadership achieved a goal neither could have reached alone"

The project of which the staff seemed to be most proud was the one in Georgia, which had its headquarters at the university and resulted in the formation of the Georgia Rural Youth Council. This council sponsored an all-state conference of students from public and private collegiate institutions who were willing to serve as leaders for rural youth work in the state. Deputations were sent out from the campuses to work with local youth in organizing programs. The faculty of the various colleges quickly became interested in the practical value of such community work as a laboratory for classroom teaching, and served as consultants in the work.

Thirty months was too brief a time in which to begin work which could be carried on permanently, although in several of the localities work is continuing in spite of the disruptive effects of the war. Now, however, the war is draining from the communities the best youth leadership, and many of the programs which were started are being suspended. The author believes that the lessons learned from these demonstrations will be of great value in postwar planning for rural youth, and that some of the lessons can be put in effect during the war itself.

ROBERT L SUTHERLAND
University of Texas

DAVIS, DARRELL HAUG *The Earth and Man*. Pp. xxiii, 675. New York: The Macmillan Co., 1942. $4.25.

There are a number of good economic geographies available to college teachers, and the publication of another could be justified only by unusually high quality. The publication of *The Earth and Man* was fully justified In this reviewer's opinion it is now the best book available in its field.

Although at times Professor Davis' style of writing is rather involved, the book as a whole is reasonably well written, and a careful choice of materials keeps interest and readability high. The selection of pictures, maps, and charts is particularly fortunate The 410 pictures and 452 maps and charts make this book rich in illustration, and, as is not always the case in books of this kind, these illustrations are specifically related to the text so that they have a true purpose and significance. The book is attractively bound and well printed, and thus in physical appearance as well as content should appeal to the student and the teacher.

The Earth and Man is divided into five parts Part I is a short introduction which traces the evolution of geographic knowledge and examines its present objectives Part II, which is entitled "Man and Environment," is concerned with the distribution and the activities of man, the interaction between man and his environment, and the changes in environment that result from the operation of both natural and human agencies. Part III, entitled "Limiting Effects of the Environmental Factors," traces the influence of such elements as climate, drainage, soils, land forms, mineral wealth, and contact with the sea on human activity. Part IV, "How Man Obtains His Livelihood," is concerned with man's economic activities and their environmental basis. A number of specific geographical areas are closely analyzed to illustrate the different ways in which man makes his living. Part V, in the form of an appendix, explains map projection, topographic mapping, land surveys, solar rotations, and so on. It is organized so that it can be used in conjunction with the major portion of the text or left out altogether, as the teacher chooses.

Too many textbooks in economic geography are little more than regional surveys which describe the chief products of each region and then tell what geographic factor determines their production at that place. This book, in contrast, furnishes the student with the general principles which must be the basis of true geographical knowledge. After carefully studying this book a student should be armed with the judgment and ability to interpret factual material that is necessary to analyze properly the special geographical situations of states and regions.

WINCHESTER HALLOCK HEICHER
Newburgh, New York

ANSHEN, MELVIN. *An Introduction to Business*. Pp. xi, 640. New York. The Macmillan Co., 1942 $4.00.

In a general survey of business, the author presents an exposition of private business within the freedoms (and qualified modifications) as: the right to determine economic activity within the framework of the law; the right to private ownership of property; the right to enter and withdraw from business; the right to make individual decisions in regard to production and distribution of goods; the right to express these individual decisions in contracts; and the right to compete in any way within the framework of the law (p. 49).

Written as a textbook, and particularly for students at Indiana University School of Business where Dr. Anshen is associate professor of marketing, the book fulfills its purpose as an introductory course to business. Examples and illustrative material are well chosen. The writing is precise, with minimum explanations of technical business problems. The volume succeeds in giving a sense of business reality to students who later take required courses in Principles of Economics and Accounting before specializing in advanced fields of study. Because of course orientation rather than integrated topics, chapters on Accounting, Statistics, Field Research, Library Research, and Business Organization appear in Part II of the text.

The structural organization is divided into thirty chapters under seven parts: Business and Society (4 chapters); The Basic Tools of Management (8 chapters); Production (4 chapters); Marketing (4 chapters); Finance (4 chapters); Competition and Risk (3 chapters); Business and Government (3 chapters). The text is not planned for specific training in any area of the major fields of business. "It is the panoramic view, the social setting, the economic function, which are presented."

Attention of the novice is directed toward what makes our economy work and how the wheels of industry keeping turning in the private-enterprise system. Dr. Anshen succeeds in giving a clear, although simplified, understanding of economic organization and business activity, as a replacement for an impression of chaos. He appraises the capitalistic system, evaluates recent changes, and examines the interrelationships of business and human society in the United States in concise terms.

HOWARD T. HOVDE
University of Pennsylvania

ANDERSON, ARTHUR G., MERTEN JOSEPH MANDEVILLE, and JOHN MUELLER ANDERSON. *Industrial Management*. Pp. xxi, 612. New York: The Ronald Press Co., 1942. $4.50.

This volume is a revision of *Industrial Engineering and Factory Management* by the authors, Arthur G. Anderson, professor of business organization and operation, University of Illinois; Merten J. Mandeville, assistant professor of business organization and operation, University of Illinois; and John M. Anderson, mechanical engineer, Minneapolis, Honeywell Regulator Company. The change in name appears to be justified by the broader scope of the new volume, and it recognizes the trend to use the term "management" as a descriptive title for books in this field.

The volume is fairly large, 612 pages, and contains full discussions of topics now usually found in such works, namely: scientific management, ownership, organization, location planning and construction of factory buildings, lighting, air conditioning, motion and time study, wages, purchasing, quality control, tool control, production control, industrial costs, and others In addition, the authors have stressed the topics of public and personnel relations more fully than do most texts of this character. To this end, there are chapters on Public Relations, Industrial Progress, Human Relations, Personnel Department, Fatigue Among Workers, and Wages and Wage Systems.

The reviewer is in full agreement with the statement of the authors in their preface that management has come to recognize more fully than it did the importance of the relations existing between industry and society as a whole. They state further that in this revision more emphasis is placed upon this aspect of management in addition to full attention to the means by which such service may be made more effective. It might well be added that the trend of industrial legislation is also in this direction, and the more industry serves the public, the less will it be subjected to legislation which, even at present, is very irksome.

This book is particularly suitable for students in schools of business organization, and somewhat less suitable for engineering students who normally will receive full instruction in factory construction, heating, lighting, air conditioning, and similar subjects. It should be very useful for industrial executives who wish to broaden their knowledge of modern management.

The volume is profusely illustrated with 173 cuts, charts, and diagrams, and 24 tables. It is, of course, well indexed. The book is published by Ronald Press and is an excellent piece of book work.

DEXTER S. KIMBALL
Cornell University

RATNER, SIDNEY. *American Taxation*. Pp. 561. New York: W. W. Norton & Co., Inc., 1942. $4.50.

Ratner has written a book that is both more and less than the story of revenue in the United States. It is more in that, in pursuit of the history of American taxation "as a social force in democracy," the author includes much that is far afield from taxation as such. It is less in that many aspects of the tax story, such as the Federal excise system and the entire gamut of state and local taxation, are accorded merely cursory mention or are entirely ignored. In view of the emphasis on Federal income and death taxes, omission to consider fully the background or the social significance of their Federal-state aspects is of interest As the author puts it, his "narrative centers on those movements which brought into existence the Federal income, inheritance, estate, gift, and excess-profits taxes" as well as on "their chief rival, the protective tariff" (p. 9).

Thus, the author deals largely with political, rather than technical, factors. Believing that the background of income taxation under the 1913 amendment, for example, was part and parcel of a larger controversy between the man of the street and the beneficiary of special privilege, he does not hesitate to go at length into "Theodore Roosevelt and the Progressive Movement," to pay his respects to muckraking, or to inquire into the relative *progressiveness* of Messrs. Roosevelt and Taft. He seems to enjoy immensely the story of how Aldrich, first servant of many varieties of special privilege, was jockeyed into supporting the income tax amendment.

The approach to the problem tackled is significant. In the first place, it should be said that the historical, literary, political, and technical tax literature Dr. Ratner has surveyed is as extraordinary in quantity as it is catholic in outlook. Despite his closely spaced bibliography of thirteen pages, much of the material surveyed and cited is not included, even though the list is in such terms as

"*Congressional Record*
"*Hearings*, especially before the House Committee on Ways and Means, and the Senate Committee on Finance
"*House and Senate Documents*"

if one may cite only three consecutive entries under "Government Documents" (p. 516). Despite the prodigious research, secondly, Ratner is far from "a researcher without a viewpoint." In fact, he aligns himself squarely with the apologists for progressive taxation from the outset, without appearing to see any reason for defending his view (pp. 51, 56). Respecting the Supreme Court's interpretation of the Sixteenth Amendment, he proposes a clear-cut challenge: "The Chief Justice and the Court majority asserted their superiority not only to Congress, but to the legal sovereign of the United States, the state and national legislatures needed to amend the Constitution. The Court, instead of being the guardian of the Constitution, assumed or usurped the role of its master" (p. 338). It is only fair to say that, since the inquiry relates to the political factors back of tax changes, the author's partisanship does not impair the study. Thirdly, the book is interesting and easy to read even though it deals with technical, and in the hands of most authors extremely dry, subject matter.

The best contribution a reviewer can make is to advise that those interested in American history, constitutional law, political parties, or social reform study the book themselves

JAMES W. MARTIN
University of Kentucky

MAGEE, JOHN H. *General Insurance.* Rev. Ed. Pp. 830. Chicago. Richard D. Irwin, Inc., 1942 $4.25.

In contrast to what the author himself says in his preface, I received the impression that he has considerably changed "the general plan of the book." A larger proportion is devoted to general insurance rather than the specialized fields. If subsequent editions follow this trend at the same rate, we shall presently have an excellent book dealing only with general insurance. The place for the special branches is in the two other volumes of Magee's insurance work.

The author has added instructive chapters on Social Value and on Economic Influences, including some short—too short—remarks on the insurance activity of the Federal Government. Most of the textbooks on insurance consider only insurance by private companies.

However, there are still many other subjects which should be added in a "general" book, such as principles of business administration, state supervision, associations, prevention, and others. All matters which are common to all or at least many branches of insurance could and should be explained in *General Insurance.* The historic development in the United States and abroad should not be omitted. A few outstanding foreign books should be added to the many good books mentioned in the bibliographical lists, the more so, as it is to be hoped that after the war, American insurance will help many foreign countries. That cannot be done without knowledge of their special problems.

ALFRED MANES
Indiana University

KISER, CLYDE V. *Group Differences in Urban Fertility.* Pp. xii, 284. Baltimore. Williams & Wilkins, 1942. $2.50.

During 1935–40 the urban-white population bore only three-fourths of the number of children necessary for replacement. This able and detailed statistical study of marital fertility in the United States, based on the *National Health Survey* (1935) of 700,000 urban families in 83 cities, shows that urban-white families earning $3,000 a year or more had only about half the children necessary for replacement.

Thus we have a twofold problem: excessive reproduction among the poor with limited resources for the educational training and health protection of their children, and lack of replacement among the family stocks able to give their children at least normal opportunities. The *net reproduction* rate of urban-white population in the *Survey* sample was .70 (1.00 = replacement). A preliminary census estimate for the period 1935–40 is .76. Thus if age-specific fertility, mortality rates, and absence of immigration remain the same, the urban-white population will ultimately decline from a quarter to one-third per generation. Yet the net reproduction rate for the rural-farm population during 1935–40 was 36 per cent above replacement.

This imbalance has probably been brought about by the time-lag in the democratization of contraceptive practices The better educated, the more well-to-do, and the urbanized adopt such practices first Only later do they reach the less educated, the poorer, and the less intelligent. Thus the first effect of contraception is to widen the gap in fertility differentials Only more recently has the gap tended to close. Studies of the situation in Sweden and England show the same trend.

However, this able study is concerned not so much with net reproduction rate (the figure to keep one's eye on because it includes mortality changes), but rather with a detailed analysis of differences in *marital* fertility in urban groups classified by nativity, color, area, size of community, occupational status of family head, educational attainment of the wife, and family income.

This book is for the specialist rather than for the layman; yet each chapter contains a convenient summary, and the conclusions in Chapter 10 are of general interest and fundamental importance for the development of a postwar population policy. Much that is reported in the study was already known, at least in a general way. Kiser's contribution consists chiefly in the broader base of the sample and in refinement on a few detailed points.

This study continues the unfortunate practice of earlier Milbank researchers on population in classifying clerks with major business executives in the one category, "Business." Probably clerks belong with the semiskilled. Dr. Kiser and his predecessors have been careful not to lump farm owners, renters, and laborers under "Agriculture" without distinction. When we get more data on genetic differences between socioeconomic groups and between family stocks, we shall want to identify the groups accurately when comparing their different net reproduction rates. Such data will have to form a part of any intelligent, long-run population policy; for although there is a convergence (as this reviewer predicted twenty years ago) in the effective fertility by different occupational and socioeconomic groups, the broad picture of an *inverse* relationship still stands. And it is ground for concern.

NORMAN E. HIMES
Hamilton, New York

BEEBE, GILBERT WHEELER. *Contraception and Fertility in the Southern Appalachians*. Pp xii, 274. Baltimore: Williams & Wilkins, 1942. $2.50.

This competent, statistically detailed analysis (a monograph in the series of the National Committee on Maternal Health) traces patterns of reproduction in the coal plateau of the southeast. After sketching the basic economy, the population growth, the migration, the patterns of consumption, and the cultural characteristics of the region, Beebe describes the origin, the objectives, and the organization of the rural contraceptive service in Logan County, Virginia, though comparisons are made with other rural areas. A simple method (jelly alone) was taught by nurses working under medical direction. The problem was to discover how far excessive fertility rates could be reduced by the employment of simple methods in depressed rural areas.

The sample consisted of 1,319 women advised in 1936–38. The average schooling was the seventh grade. More than 90 per cent of the husbands were engaged in mining operations.

The study shows that the uncontrolled chance of conception in this region is no higher than elsewhere; that only a lack of contraceptive practice explains the prevailing high fertility. The interval between marriage and the first conception was hardly more than three months in half the patients admitted to the service. No evidence was found that girls marrying very young had a brief period of infertility (as a recent theory demands). A third of the Negroes and half of the whites used some contraceptive method prior to admittance to the new service. The younger, better educated, and economically favored couples led in use of contraceptives Their methods were about 50 per cent efficient before instruction. Ten per cent of the conceptions were wasted in spontaneous abortions, stillbirths, and induced abortions.

After instruction, the pregnancy rate fell 43 per cent and the live birth rate 41 per cent. The percentage of exposure classified as contraceptive increased 70 to 80 per cent above that before the service was instituted. Correspondingly, there was an increase of 20 to 30 per cent in contraceptive efficiency after instruction. The great increase in efficiency came not so much from a better method as from more continuous practice. The prescribed method proved to be little, if any, more effective than methods already known to the patients (p. 153). Beebe, like others before him, stresses the necessity of not relying too much on any one method in clinic practice. Only the development of radically new methods, he declares, will make contraception independent of the motivation and skill of the patient and overcome the present tendency to use a variety of methods.

Acceptability of the method was low. After two years, only 36 per cent of the patients were still using the method taught. After the prescribed method was abandoned, half or more of those still needing protection made no effort to practice contraception. Of the Negroes and the whites who tried the method, 70 per cent reported regular use. Only 76 per cent of the irregular users tended to rely on the method twelve months after enlistment. Sixty-seven per cent of the Negroes and 71 per cent of the whites took the initiative in requesting supplies. Thirty-nine per cent of the whites made some objection to the method. The more educated the patients, the more likely they were to shift to something else. At the last follow-up, some twenty-one months after admission, 53 per cent of the Negroes and 60 per cent of the whites no longer used the method taught. The chief reason for discontinuance was a belief that the method failed (one-fifth of the cases). An additional tenth abandoned it for lack of confidence or preference for other methods.

There are forty-nine tables and twelve figures. The book is illustrated with attractive photographs.

NORMAN E. HIMES

Hamilton, New York

WEBSTER, HUTTON. *Taboo.* Pp. xii, 393. Stanford University: Stanford University Press, 1942. $4.00.

This book is a monument to the industry and the scholarship of its author, and a fitting companion to his classic study of primitive secret societies. It brings together a vast amount of factual material on the phenomenon of taboo as it occurs in cultures in all parts of the world, and presents this material under a series of headings corresponding to the various situations in which such prohibitions commonly occur. All sources are fully documented, and the book will be an invaluable aid to future investigators. However, the author's approach is in the tradition of *The Golden Bough* rather than in that of any of the recent techniques of ethnological study and comparison, and the very wealth of factual material presented tends to obscure his theoretical conclusions.

From the theoretical point of view, the interest of the work centers in the first chapter, dealing with The Nature of Taboo Taboos are defined as "prohibitions which, when violated, produce automatically in the offender a state of ritual disability—'taboo sickness'—only relieved, when relief is possible, by a ceremony of purification" (p. viii). A further distinction is drawn between genuine taboos and "animistic prohibitions" sanctioned by the will of some Being, and "sympathetic prohibitions" based on analogical reasoning. The irrational nature of taboo is stressed, and also the fact that many taboos seem to have little social purpose. There are also interesting discussions of the factors which may be involved in the creation and perpetuation of taboos.

The psychological aspects of the phenomenon seem to the reviewer to have been somewhat neglected. The author himself recognizes this, since he says: "As we learn more about primitive mentality the nature of taboo will be better understood and the inquiry into its motivations may well be extended to include a study of the child mind, the folk mind and the subconscious mind as revealed by psychoanalysis" (p. 14). It seems unfortunate that he did not attempt the fuller interpretation which would have been possible even in the light of our present knowledge. It is also unfortunate that more attention was not devoted to the social implications of taboo. The chapter which deals with these is one of the briefest and least conclusive in the book.

RALPH LINTON

Columbia University

ANGYAL, ANDRAS. *Foundations for a Science of Personality.* Pp. xii, 398. New York: The Commonwealth Fund, 1941. $2.25.

Much of the confusion in the field of personality study arises from the many and varied interpretations and methods. These approaches lie along a continuum from the holistic and organismic viewpoint at one end to the detailed statistical analysis of specific traits at the other. Within this range, of course, a vast amount of research and theory has been produced. Soon after World War I, the holistic view was stressed by biologists like Ritter and by politicians like Smuts. Yet their views never greatly influenced American students of personality, who for the most part had long operated under the aegis of Thorndikian psychology, with its stress on minute measurement of mental traits and capacities.

The most important attack on the school of specificity came with the diffusion of Gestalt psychology into this country, first at the hands of Köhler and Koffka, and more recently from Wheeler, Lewin, and Brown. While not precisely holistic in the biological sense, the Gestalt psychology was sympathetic with the study of the organism-as-a-whole. It emphasized the importance of configurational analysis in reference both to the situation and the individual responding thereto. It was particularly critical of the concept of personality as a mere summation of partial and specific reactions and structural units, such as traits or talents.

The present book derives largely from the biological school of holism, but it draws in part on Gestalt psychology as well. The author, who is both medical man and psychologist, has attempted to construct a theory of personality around a holistic view, that is, "a theory of the integrated total personality" (p. 56), and, second, around the idea that this holism consists not merely in studying a total organism but in the dynamic relationship between the organism and the environment. This relationship he calls the "biosphere."

The author's support of his views is theoretical rather than empirical. He posits a theory of "systems" to replace that based on linear "relations" of two or more variables such as is basic to the statistical analysis of the school of specificity. The "system principle" depends not on concepts of linear correlation of units but on their positional arrangement within a total manifold of objects or events. "In a system the members are, from the holistic viewpoint, not significantly connected with each other except with reference to the whole" (p. 250). The personality is not a mere aggregation of separate units but rather a matter of the arrangement of parts with respect to the totality (p. 256).

The concept of biosphere refers to the dynamic relations between the organism and the environment considered as a system, as a "biological total process" (p. 92). In other words, the biosphere is a larger unified system, the factors of which are the organism and the environment in polar contact with each other. So far as the former is concerned, there is, the author holds, an inherent trend toward increasing autonomy which arises from the continuous struggle of the organism against the heteronomous forces of the environment. With special reference to the human personality, this dynamic duality is evident in the conflict between the unique, autonomous, and self-assertive trend of the individual and that toward homonomy, toward unification with one's fellows, with what he calls the "superindividual wholes" (society) or its derivatives, such as God or ethical principles.

The detailed discussion of these opposing trends takes up the interplay of drives and goals, of end-means relations, of differentiating as against integrating processes, and of object-subject patterning There is a paucity of concrete statistical or case-study data and a good deal of geometric analogy —a verbal device almost inevitable in view of the stress on a spatial system rather than correlation. The whole volume is a closely reasoned thesis in defense of what is essentially a biological rather than a psychological orientation. In truth, the volume might well have been entitled "Foundations for a Biology of Personality."

As a matter of fact, the biological emphasis in this book is such that the societal and cultural factors are not adequately treated. The author's discussion of culture is the weakest part of the book. For instance, the technological-economic order is discussed as a form of social symbiosis as if it were independent of culture. Moreover, Angyal actually equates culture to the moral order when he says that the introjection of culture into the individual induces what Freud called the superego. Such identification of culture with the moral code restricts its use beyond anything which contemporary anthropology or sociology would consider valid. Not only does the author misconstrue the meaning of culture, but he completely neglects the basic social-psychological concept of interaction which could be significantly fitted into his biospheric theory. The inclusion of George Herbert Mead's discussion of the rise of the social self out of the interplay of interpersonal relations would have strengthened and expanded the author's treatment of social integration and its relationship to personality development.

Yet in spite of these limitations, this volume should serve to indicate the dynamics of organism-environment relations, should help to offset the recent undue stress on the effects of culture upon personality to the neglect of other factors, and should aid, especially, to correct the persistent tendency to treat human personality as a mere aggregate of specific traits and abilities. Although we still lack the empirical research to support the holistic thesis completely, such books as this should help to reorient both our clinical analysis and our laboratory techniques to a more complete understanding of that still elusive thing we call personality.

KIMBALL YOUNG

Queens College

DYSON, WALTER. *Howard University—The Capstone of Negro Education. A History: 1867–1940.* Pp. xiv, 553. Washington: The Graduate School, Howard University, 1941. $4.00.

This informative study was intended to be a souvenir of the seventy-fifth anniversary of the founding of Howard University. It depicts the origin and the establishment of the famous institution and traces its growth and progress throughout the various stages of development from "elementary school" to "incipient university."

The work is mainly "a narrative, factual account of the University as a whole." However, particularly in the conclusion, it offers timely generalizations which reflect the mature judgment of the author. It takes the view that the history of the institution may be divided into four well-defined periods. The first, extending from 1866 to 1874, was marked by a strong military influence. Soldiers were in control of affairs. The second, from 1874 to 1877, was "a period of disorder-anarchy." The third ended, perhaps, in 1926. A conspicuous feature of this period was the rise and decline of the influence of "the deans and other administrative officers." Thereafter the university entered upon its fourth and "modern period"—years during which there developed a strong tendency toward democratic control, reflected partly by the emergence of the faculty as a strong, if not the dominant, influence in the life and direction of the institution.

The historical development of Howard University has been similar in some important respects to that of other colleges which were founded during the post-Civil War period. For many years the university was hardly an institution of higher education. During the first four decades it was not, in the formal sense, "primarily a school." In effect, it was "a social center." During those years the chief emphasis was laid upon "the life of the students in the dormitories, the prayer meetings, the Sunday school, the daily, compulsory chapel attendance." The college sought to meet some of the fundamental needs of the youth of a freed people who were then in the early stages of adjustment to American civilization. Under these circumstances the library was not the central feature of college life. The principal end of the educative process was probably to build character and to train somewhat generally for leadership Not before the first decade of the twentieth century did the university provide good library facilities and lay emphasis upon the promotion of scholarship. Since that time it has stimulated the research efforts of faculty members and of graduate students. It has therefore assumed an increasingly important role of influence in the national life.

In presenting his thesis of the growth and development of Howard University, Professor Dyson has performed a difficult task well. Basing his work upon official documents and other trustworthy sources, he has written a full, general history of the institution with clarity and insight. His work conforms to standards of modern historiography. In it, he has sought to preserve important excerpts from rare sources of Howard University history. His book is appropriately illustrated. He has made a valuable contribution to the literature of the field.

A. A TAYLOR

Fisk University

LA FARGE, OLIVER (Ed.). *The Changing Indian.* Pp. xiv, 184. Norman: University of Oklahoma Press, 1942. $2.00.

This compact volume brings together the thinking of some of the ablest students of Indian matters in the country, representing the Federal Indian Service, practicing anthropologists, missionaries, and nonsectarian Indianists. As a cross section of the situation facing Indians and facing the administrators of Indian affairs, it is well focused, broadly inclusive, and temperately stated. Nor is it entirely a factual record of population drifts, land statistics, and economic factors. It is spirited reading matter, full of the promise which has animated discussions on Indian life this past decade and more.

The several papers dealing with population and land, taken together, bring to sharp relief the painful situation in which the Indians of the United States find themselves. This is the situation of a growing population strangling itself within the bonds of its inadequate resources How fast that population is growing is made graphic in Frank Lorimer's opening essay, which points out that the rate of increase is comparable to that of China, Puerto Rico, or Quebec—populations notoriously prolific. The numerous difficulties facing the Indians and the Indian Service in working toward solutions (obviously there can be no single, over-all solution) form the burden of the articles on land contributed by Ward Shepard and Allan G. Harper, and of Willard Beatty's paper on training Indians to use their resources. Particular attention is called to Dr. Provinse's article on cultural factors in land-use planning. Apart from its subject matter, the article is interesting because it illustrates the effort which Indian administration has made to place the social scientist in staff work and to apply social science in field procedures. The situation described by Provinse, where people had to be persuaded in their own interests to do the thing which seemed to be against their interests, was one which called eminently for a wise social science.

Issue might well be taken with several positive statements contained in Dr. Shapiro's paper on the mixed-blood Indian For one, inferences as to the relative fertility of full-blood and mixed-blood Indians drawn from data contained in the 1910 census ought to be treated with extreme skepticism. Vital statistics of full-blood communities are far from satisfactory even today, and anything gathered in 1910 must have been the sheerest guess. Notoriously, full-blood Indians do not talk of life and death to census enumerators, or anyone else. Likewise, where Indian custom marriage prevails, as is the case in most typically Indian communities, census estimates on biological mating are not too important. As for the suggestion, repeated in essence by Mr. La Farge in his summary, that the United States is sheltering "as Indians large numbers of near whites" and by this policy interfering "with a normal assimilation,"—several factors need to be considered: (1) Membership in an Indian tribe is determined by tribal will, not by governmental fiat; (2) most government services are now, and have been for a number of years, restricted to Indians of one-fourth or more degree; and (3) no one has yet determined that the process of assimilation, once started, must inevitably consummate in total assimilation, or that the process may not even reverse itself.

The symposium, notwithstanding its title, reveals very little of the Indian, changing or unchanging. It deals rather with administrative policies, with attitudes toward the Indians, with techniques in dealing with racial problems. It indicates changes in these matters, which is all to the good, but it fails to verify the title.

The missing emphasis would have been supplied if there had been a discussion devoted to the Indian Reorganization Act, a law which is frequently mentioned in the symposium but nowhere fully explored. Actually, it is precisely here, in the Indians' efforts to set up functioning self-government and to move into a field free of Federal domination, that we get our best opportunity to understand something of what the Indian is like and how he functions in the modern world.

JOHN COLLIER

Washington, D. C.

SWEET, WILLIAM WARREN. *Religion in Colonial America.* Pp. xiii, 367. New York: Charles Scribner's Sons, 1942. $3.00.

This new book by Dr. Sweet, who has established himself as the outstanding authority on the history of American Christianity, opens a new series, projected for three volumes, designed to place religion in its proper perspective in American colonial history. It surveys the beginnings of organized Christianity in the British colonies which ultimately became the nucleus of the United States, the competition and expansion of rival immigrant sects, and their influence on the crystallization of the American spirit. Included in its purview are Anglicans, Puritans, Baptists, Quakers, Roman Catholics, Dutch Reformed, Germanic groups (Lutherans, Mennonites, Dunkers, German Reformed), and Presbyterian Irish. Its documentation is extensive and reflects the author's wide knowledge of the early printed sources, into which he has made diligent researches.

The author combats the neglect of spiritual and idealistic factors in the evolution of America, characteristic of the economic determinists in recent American historiography, and stresses the religious motives leading to colonization. However, he takes some account of economic pressures and drives (especially on the part of adventurers hungry for commercial profits and of landless masses avid for land), and of the general yearning for a freer *Lebensraum* in the New World. Moreover, he is forced to admit that political and commercial factors were indissolubly connected with religious ones, e.g., in the anti-Catholic motivation of a Protestant country like England to combat the empire-building of Catholic Spain and Portugal.

Up to 1660 the dominant religious groups in America were simply transplantations of the various Christian sects of Europe, particularly the conservative wing of the Protestant Reformation, and retained the characteristic relationship of church and state in all colonies save Rhode Island and Maryland. After that time various new liberal influences came into play, which gradually increased the power of the left-wing religious groups, culminating in the development during the eighteenth century and thereafter of a distinctive Americanized genre of Christianity of a characteristically democratic type. The great colonial revivals brought religion down to the masses for the first time, and finally, after a struggle lasting almost a century and a half, the church succeeded in achieving a distinctively American independence of the state. "All the great freedoms for which American democracy stands today—the freedom of conscience, individual rights, self-government, separation of church and state, freedom of speech and press—all have their roots in the principle of those left wing bodies which came to full fruition on American soil." It was here that the small radical sects of the Old World found their opportunity for development.

This large-scale history of the transplantation of Christianity in the United States contains many interesting sections, e.g., the résumé of the growth of religious liberty in the United States, of the debunking of Puritan debunking, and of such by-products of American religious history as American higher education. Also, the book provides numerous arresting observations, e.g., that "by the end of the colonial period there had come to be more unchurched people in the American colonies than were to be found anywhere else in Christendom."

However, it may be questioned whether Dr. Sweet's value judgment as to the primacy of the religious factor has not caused him to underrate the importance of the economic elements, and whether his concentration upon the biography of various religions in their New World habitat has not led him to neglect certain important sociological factors. In this connection the student of the sociology of religion will challenge the author's summary rejection of the Max Weber thesis as to the connection of Protestantism and capitalism, and his inadequate attention to a viewpoint like that of H. Richard Niebuhr, whose name does not even appear in the fifteen-page bibliography. Other points of possible criticism are the inadequate differentiation of sect and church, and the tendency to identify the verbal professions of various religious groups with actual reality without any attention to massive discrepancies. It is possible, however, that the author may be planning to treat some of these points in the subsequent volumes, which will certainly be awaited with eagerness.

Ephraim Fischoff

Hunter College

Jandy, Edward C. *Charles Horton Cooley: His Life and His Social Theory.* Pp. viii, 319. New York: The Dryden Press, 1942. $3.00.

Here is a sensitively written book about a most sensitive man. Begun as a doctoral dissertation, it has quite obviously matured and mellowed over a period of years, until it appears not only as a valuable contribution to sociological literature, but as a work of art in itself. Of the 269 pages of the text proper, 109 are devoted to Cooley the man and the thinker. (In my opinion, Chapter III, "Thoughts on Science and Method," belongs in this category as well as Part I on "Life.")

Jandy was most fortunate in having complete access to Cooley's records, files, correspondence, "Journals" (covering forty-six years), and library. The result is a most comprehensive, sympathetic, and penetrating analysis of this pioneer in American sociology. We find here the important details of his ancestry, private life, and academic career, the unique but lovely ingredients of his personality, the influential factors, especially books and men, in the origin and flowering of his ideas, his general philosophy of life, and his professional and scientific points of view. Here pass in review the beacon lights and masters of his thought: À Kempis, Goethe, Emerson, Thoreau, Darwin, Bryce. We see here the Cooley whom many of us, who admired him from a distance only, had analyzed in part—an introspective and contemplative man, given to self-analysis; a reticent, sensitive, and unsociable man, but keenly observant and analytical of what he wished to see from his exclusive watchtower; a man withal intellectually and spiritually bold, defiant, and self-assured. One suspects that Jandy has done it so well because, in addition to a flair for personality analysis, he found in Cooley a congenial and compatible spirit. Though admitting discipleship, he avoids worship. Another person would have given us a very different treatment.

Cooley's social theory, quite appropriately, is divided into two parts. Under "Human Nature and Personality" we find an analytical and critical examination of the individual and society, the nature of social reality, the development of self and personality (including the "looking-glass" self), the social genesis of mind, the phases of self (including his anticipation of the Adlerian superiority-inferiority complexes), and the social aspects of conscience and personal degeneracy. In "Some Phases of Social Organization" are treated primary groups and ideals, public opinion and democracy, social classes, and institutions (including his contributions to institutional economics). Cooley is concerned with sociology not so much as a science—certainly not a statistical, particularistic, experimental science, redolent of methodology and research—but as an organic body of ideas and subjective generalizations arrived at by "open and watchful imagination" and "sympathetic imagination" (Cooley's terms), and coming out of one's own intellectual and artistic being as illuminated and confirmed by one's own life experiences.

Cooley gets full credit for his original and seminal contributions. Jandy's treatment of the theory gives adequate coverage, and most of it is very good; some of it has already been done better by others. Here is, however, the first systematic and comprehensive analysis. A bibliography and revealing notes are attached.

This is a book that sociologists, psychologists, social psychologists, and economists should read.

J. O. Hertzler

University of Nebraska

Barnes, Harry Elmer, and Oreen M. Ruedi. *The American Way of Life.*

Pp. xxi, 802. New York: Prentice-Hall, Inc., 1942. $5.00.

This work of twenty-five chapters is divided into nine parts as follows: Historical Background, Social Framework of Human Life, Physical Basis of Society, Economic Foundations of Society, Political Institutions and Legal Problems of the Contemporary Age, Communication and Public Opinion, Leading Social Problems, Social Pathology, and Programs of Economic and Social Reconstruction.

The Preface states that the work is "offered as an introduction to the state of American life in the current period of war and world change"; and, incidentally, "to indicate the ways in which a forthright facing of our institutional shortcomings might encourage us to resolute social action" for victory in the war and "peace and security in generations to come."

Books of this sort seldom set up any conceptual framework that unifies and organizes their subject matter in a consistent whole. This one, however, is to be commended for promising such a framework at the outstart. The authors attribute the problems dealt with to one common cause, namely, the lag of the nonmaterial culture behind the material. It is a significant principle, but one soon discovers that it is little more than a pretext on the part of the authors, for in most instances no use is made of the concept in treating the problems. There are indeed good reasons for ignoring it, since as a causative theory it does not apply in a good many cases. In other words, the scope of the book overreaches the proposed framework. It gets too big for its breeches or the breeches become too small for it, whichever way one cares to look at it.

Thus, in spite of its avowed intentions, the work turns out to be just another ununified omnibus book of problems. It carries an even greater assortment of unrelated passengers than any of the senior author's other recent productions. In fact, he acknowledges it to be chiefly a condensation of *Society in Transition* and *Social Institutions* with a concluding part on Social Reconstruction added. Although he may use his material to give a somewhat different emphasis from that of his other problem treatises, one can see little justification for serving up so obvious a rehash except to further potboiler ends for both author and publisher. However, from a commercial viewpoint the book clearly appears in response to a growing demand for texts suited to general social science courses offered by some colleges and universities. These orientation or survey courses call for just such a hodge-podge as Barnes has dished up, i.e., one composed of a little history, economics, political science, anthropology, criminology, and sociology of almost every special variety, well seasoned, nicely garnished, and served piping hot.

Apart from these strictures, the book is a most excellent one of its kind. It is well written, well informed, generally accurate and sound in its data, reasonably objective in attitude, carefully organized, and arresting to the point of fascination in style and method of presentation. Those who use such texts will find it among the very best.

NEWELL L. SIMS

Oberlin College

THOMPSON, JAMES WESTFALL. *A History of Historical Writings.* Vol. I, pp. xvi, 676; Vol. II, pp. ix, 674. New York: The Macmillan Co., 1942. $14.00.

Professor Thompson completed before his death, with the help of Dr. Bernard J. Holm, a book which will not only remain a monument to his scholarship but also will prove of greatest usefulness to historians and social scientists. Within the relatively small compass of fifteen hundred well-printed pages, he has succeeded in tracing a history of historiography from ancient times till the beginning of the twentieth century in such a way that the book nowhere resembles a simple catalogue of names and works, but gives a well-rounded picture of the personalities and achievements of all important historians, their background, and the character of their contribution to the advancement of historical knowledge and interpretation. A distinctive and very welcome feature of the book consists of copious quotations from the historians and excellent bibliographies, in themselves a major achievement of the book.

This history of historiography is the first successful attempt of its kind known to the reviewer. It is encyclopedic in scope and treatment. Living historians are excluded, which is entirely justifiable; but many readers will regret that American writers have not been included, because it would be most helpful to view them against the general background of historiography, a background mastered by few men as Professor Thompson apparently mastered it. Yet with this one omission, the wealth of material and the breadth of treatment are beyond reproach. Professor Thompson has not only discussed the purely professional aspect of historiography, of historical writing, as for instance Fueter did but he has devoted as much space to the history of the underlying philosophical conceptions, and he has not neglected history as a branch of literature. The first volume deals with the period down to the seventeenth century. The less-known historians of the Near Eastern peoples are included. The second volume deals with the eighteenth and nineteenth centuries. Much material is covered which in itself forms interesting essays on important aspects of historiography, like the chapters on institutional historians, the problem of town origins, the influence of modern science on the writing of history, and the progress of modern historiography in the field of ancient and religious history. Though most of the emphasis is given to German, French, and English historians, the minor countries of Europe are in no way neglected.

The book is written in a lucid and straightforward style. Courses in historiography are unfortunately rather rare in our colleges. This book not only belongs in the library of every historian and social scientist, but it will, let us hope, stimulate the study of historiography and serve as textbook and guide for the teacher of such courses. A history of historiography is to a certain extent a history of Western civilization and of its changing concepts; for Western civilization has always been historically minded, a legacy not only from the Greek but above all from the Hebrew tradition with its emphasis upon God as a God of history, and time as the essential category of reality. And, as Professor Thompson points out, the high function of the historian is interpretation. He rightly rejects the narrow view of *scribitur ad narrandum, non ad propandum;* writing history means to interpret, to judge, to evaluate. The conceptions of value, changing from epoch to epoch, from country to country, from personality to personality, mirror the great process of the unfolding development of the human mind and of its knowledge of its own origins and progress. In that sense a study of historiography is a study of the growth of the human mind in historic times.

HANS KOHN

Smith College

REYNOLDS, BERTHA CAPEN. *Learning and Teaching in the Practice of Social Work* Pp. ix, 390. New York: Farrar & Rinehart, 1942. $2.50.

The promise in the title of this volume—learning, teaching, practice—is fulfilled in its pages. While its primary concern is with the processes of teaching in social work, reference is made inevitably to learning and practice in social work, the three are so inextricably interrelated. Before Miss Reynolds could write such an analytical volume it required first, learning how to do social work, second, service as a social worker, and third, experience as a teacher. To all of these Miss Reynolds brings an unusually sensitive insight and a facility for lucid expression. These qualities make the volume as valuable to practitioners as to teachers.

The volume opens with a discussion (discussion is the dominant theme throughout) of the point of view and the substance of social work. The confusion among social workers as well as teachers as to what social work is, and particularly whether it is art or science, is evident. One is not even sure that the author has resolved that confusion. Perhaps that is to ask too much. At least the reader is convinced that social work is a profession—the reassurance we have all been hoping for!

The examination of learning as an art and the analysis of the process of teaching are masterly, and, in this reviewer's opinion, the clearest and simplest statements on the subject yet written. They will repay not only the teacher of students and the teacher of teachers, but social workers themselves.

A third part of the book treats of supervision. Perhaps the substance is to be found on pages 119–20, as follows: creating an appetite for learning; satisfying it with good nourishment; stimulating action to put the learning into practice; helping with difficulties which arise in practice; stimulating appetite for more learning.

A worker or a supervisor must see the inevitable bearing which such a concept has upon supervision. Indeed, supervision may be regarded as teaching in a given kind of situation; or, more accurately, teaching and supervision are obverse faces of the same coin.

The concluding section of the book treats adequately the processes involved in working through others. One is impressed with the author's conviction—not claimed to be original—that the end of learning, of teaching, and of supervising is to enable another person or persons to achieve to the full the capacity that lies within. Idealistic though this may seem, it is perhaps the *realest* thing social work does. It happens in a child guidance clinic, a foster home, a school situation, in court, in prison, in a hospital, in a settlement house, in an impoverished family in city or country—in short, wherever people are having difficulty in dealing with themselves, with others, or with social situations of which they are a part, willingly or unwillingly.

As social workers or teachers of social workers, we have much to learn. Books such as this one give evidence of the passion for self-study in this newest of helping professions.

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AMERICAN ASSOCIATION OF SCHOOLS OF SOCIAL WORK, THE STUDY COMMITTEE OF THE. *Education for the Public Social Services.* Pp. xiii, 324. Chapel Hill: University of North Carolina Press, 1942. $3.00.

For some years there has been a lively interest—to put it mildly—in the role of schools of social work in providing educational training for the public social services. The present volume records the study devoted to that matter by a committee of the American Association of Schools of Social Work with the counsel of representatives of state and Federal agencies in the field. It is the intention to have the findings and recommendations taken under joint consideration by schools and agencies, to eventuate ultimately in a more effective co-ordination of the two.

Chapter II carries the burden of the study. Its sixteen groups of findings and recommendations would lead the reader to wonder whether anything has been done, particularly since the inception of the Social Security Act, to relate the services of schools and agencies to each other in an effective program of public social services. The outstanding impression upon this writer is the compelling necessity to accomplish a joint action of schools and agencies. Unless this end is achieved, this will be one more study, arduously and sincerely undertaken, under foundation beneficence, that will gather dust on the shelves.

The findings are substantiated in the chapters that follow, and bear out the experience of those who are in the schools or the agencies. A very clear distinction is made repeatedly between the function of the school and the agency respecting the workers' pre-entry and post-entry training. Those sections addressed to colleges with departments of social work and to college social science departments are particularly pertinent. The same must be said of the remarks about education leave recruitment, salary discrepancies (between the public assistance and the insurance services), and field work placements.

A fundamental conviction characterizes the entire study, namely, that skill and knowledge are basic contributions of the school of social work, for which no substitute, not even good manners and good intentions, exists. On page 45 it is observed that: ". . . the schools then do not attempt to prepare students for particular activities within the framework of social work but recognize that the entire curriculum should have a substantial content of skills and information which is interchangeable between agencies and programs serving individuals and which has certain traditions which can be carried over experimentally to new undertakings." The task of the agency is to put that skill and knowledge to work in a specific area and within the framework of that agency's function. It is to the everlasting credit of the study committee and of the Association of Schools of Social Work which it represents that as frank a self-evaluation is made as is found on pages 172–73 to account for the gap between objective and accomplishment in providing preparation for the field of social work.

A study of this kind must necessarily be limited for one reason or another. Nevertheless, one is disappointed that other public social services—the non-Social Security Act services—had to be omitted. It seems to this reviewer that many of the questions discussed in *Education for the Public Social Services* are equally appropriate in the other—and in many instances older—areas of public social work, such as probation and parole, vocational rehabilitation, and social services in the schools.

In view of the large area of rural social services, it is a real lack not to have a more understanding and adequate discussion of rural programs. It is not sufficient for the study to observe (p. 218) that some ". . . believe that the differences between rural and urban practice are largely those of culture patterns, and maintain that skills and knowledge basic to the one are basic to the other." Of course the skills are basic, but it makes a great deal of difference in the exercise of skill and knowledge whether one is really oriented to the culture pattern of the particular group with which one is working. The social worker, and particularly teachers of social work, can learn something from the cultural anthropologists.

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(Tentative title)

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